A MANUAL
FOR THE
Study of the Human Voice
EXERCISES AND PRACTICES
FOR
Singing
and
Speaking

PERFECT VOICE INSTITUTE
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LESSON XXI

THE LAW OF MECHANICS—(*Continued*)

It must seem odd to those who have paid little or no attention to voice culture, that so much stress is laid in these lessons on the false action of certain vocal or non-vocal muscles. Those of my students who have studied voice for a considerable period will easily understand the importance of any information dealing with the interfering muscles.

We pride ourselves on the advancement made in modern times and, as far as mechanical invention goes, we have advanced very much. But a great deal remains to be done. In most branches of study we are still a long way from knowing the exact truth. This is especially true of the human body.

The first man, created of spirit, soul and the material essence of the earth, was perfect physically, mentally and spiritually. Why did he and his descendants not remain in this perfect state? Simply because of his disobedience to either one or all of the laws which govern the spirit, mind and body. We call that disobedience, sin.

If I were to eat a decayed egg, I am sure that it would make me ill. But in China, people bury eggs in the ground until they are very much spoiled and then eat them with relish and apparently without danger to their health, so missionaries have told me. They have accustomed themselves to the poison contained in the decomposed egg.

Just so a singer or speaker may accustom himself to a false use of the vocal organ and he himself may be satisfied with his voice. But you may be sure that

he is paying the penalty in some way for his disobedience. Tonsilitis is found as a rule only in weak throats. Consumptives nearly always speak with a very weak voice not because their breath is short, but because their vocal organ is weak. Listen to the stammerer; he breaks every law of the vocal decalog.

The United States law says: "Ignorance of the law is no excuse!" There is such a thing as a punishment inflicted by Nature, for every violation of her law brings its own consequences, which at first may be very slight, but which become heavier as we persist in the breaking of the law. In my estimation the everlasting and often nauseating talk about morality is a sign of decadence. The moral laws are most often broken because the physical laws are disobeyed through ignorance.

I want my students to know the physical laws of voice, hence this renewed discourse on false and true vocal action.

THE INTERFERING MUSCLES ARE ALL ATTACHED TO THE HYOID BONE

All muscles which interfere with the true voice action, do so only because they are attached to the hyoid bone. They obstruct the chord-stretching effect in two ways:

1. By preventing that tilting of the hyoid bone which in turn tilts the Adam's apple or thyroid cartilage and thereby stretches the vocal chords.

2. By drawing the hyoid bone, and with it the entire larynx, forward, away from the spine, thereby again preventing the stretching of the vocal chords.

THE BIVENTER MUSCLE—CRANIUM TO HYOID BONE

Turn to Figure 44 in the fifth lesson and examine the two muscles marked biventer. These two muscles are joined together near the hyoid bone by a tendon.

1. Both parts of this muscle combine to pull the front part of the hyoid bone strongly upward, thereby counteracting the essential down-pulling, thyroid-tilting muscle, the sterno-hyoid and also its assistant, the omo-hyoid muscle.

2. The part of the biventer muscle that grows out of the chin can pull the hyoid bone and larynx forward away from the spine.

3. The main part of the biventer muscle, that part which grows out of the cranium or head, can draw the hyoid bone backward, causing a choked though loud tone. The hiccough is mainly effected through this muscle.

STYLO-HYOID MUSCLE

In Figure 44, you will also find the stylo-hyoid muscle. It is fastened above to the styloid process—a penlike bony projection from the skull, near the ears.

Because this muscle unites with the biventer muscle, it can also oppose the downward-pulling, chord-stretching muscles which extend from the breast and collar bone to the Adam's apple.

THE MYLO-HYOID MUSCLE—JAW TO HYOID BONE

If you draw a finger all around the inner side of the lower jaw as far as the back teeth, you are touching the mylo-hyoid's line of attachment to the jaw. See also mylo-hyoid in Figure 44. The fibres of this

muscle, which start from rear of the back teeth, extend downward and fasten to the body of the hyoid bone, and can pull this bone upward and forward.

THE GENIO-HYOID MUSCLE—CHIN TO HYOID BONE

As may be seen in Figure 44, this muscle lies above the last mentioned mylo-hyoid muscle and below the tongue. It extends from the chin to the hyoid bone.

This muscle can draw the hyoid bone and the attached larynx forward, and away from the spine.

GREAT POWER OF THESE FORWARD-PULLING MUSCLES

As has been described, no less than four pairs of muscles can pull forward and some upward also, upon the hyoid bone and drag the entire larynx away from the spine. These muscles all have their front ends attached to the lower jaw. They are evidently intended to open the mouth by pulling the lower jaw downward; except the mylo-hyoid muscles, which form the floor of the mouth.

But this group of jaw muscles which may act so injuriously upon the voice, can produce a powerful effect only when the lower jaw is held up by other muscles connecting it with the head. When the up-pulling muscles hold the jaw firmly, the down-pulling muscles can pull with more force than when the jaw is not thus supported.

In Figure 46, Lesson VI, you see how the jaw is moved upward by exceedingly powerful muscles. Now when these muscles which pull the jaw upward are held rigid, the muscles which pull the jaw downward, and which are also connected with the hyoid bone, also

contract with great force, the result is a most pernicious influence upon the voice. The jaw-stiffening muscles can harden the entire throat and drag the larynx into unnatural positions.

THE GREAT TEMPTATION TO CONTRACT THE JAW

The temptation to contract the jaw is very great indeed. It almost seems **natural** to hold the jaw tight. In almost any physical performance we associate a great effort with the idea of great muscular exertion which we expect to feel as a strain upon some part of the body. If we lift a weight we exert ourselves in proportion to the weight and we feel the exertion in the arms and shoulders. If we throw a stone, we instinctively flex the arm more strongly the greater the distance we wish to reach. The same in jumping. For a high jump we exert ourselves more than for an ordinary jump.

In a like manner the speaker, and still more the singer, often makes an instinctive effort, especially for loud or high tones. He judges correctly that a louder or higher tone demands a greater effort and, naturally enough, thinks that he must **feel** the effort. His vocal habits are already formed and most likely are far from being right. The rapid articulation in common speaking leaves the tongue muscles too much relaxed to allow of rapid movement. The need of constantly changing the shape of the mouth's rear cavity for different vowels incessantly varies the position of the soft palate as well as the tongue.

These rapid changes excite strong sensations, but neither the speaker nor the singer can localize them exactly. Here lies the great danger: say the voice

lacks volume or perhaps musical quality. In the first case the student thinks he must exert himself to make the voice stronger, in the second case he tries all sorts of means and ways to change the voice, to make it more musical. He seeks for some local efforts, which he can feel and finds the mischievous jaw muscles only too ready and eager to satisfy him.

STRONG SENSATIONS WRONG

The previous lesson has shown how easy it is to contract the jaw muscles. The speaker or singer chooses them instinctively instead of the tongue muscles, because they at once make the voice stronger and he feels that he is doing something. The average person is not trained to differentiate sharply between a good voice and an inferior voice. If he feels a **change** in the voice he is satisfied. The jaw muscles pull upon solid walls of bone, while the tongue muscles pull only upon yielding parts. The jaw muscles can be felt very strongly. The tongue muscles cannot. It is easy to see why so many instinctively contract the jaw muscles.

RELAXATION ALSO WRONG

Since wrong muscles have so much greater power to excite strong sensations and the right muscles so much less, voice teachers generally advise their students to dismiss all effort. They tell the pupil to hold the throat perfectly relaxed in order to avoid forcing. This would be all right, if the student could relax only the wrong muscles. But in trying to relax, he also relaxes the right muscles; those which stretch the vocal chords.

The right vocal muscles must contract very powerfully for any tone, even for the soft ones. The difference is, that in the loud, unmusical voice, the muscular

effort is wasted, while in the true, strong and musical voice, **no** effort is wasted.

When the hyo-glossi muscle is trained to its utmost strength, then it will naturally assert itself and automatically eliminate all the wrong muscles. This of course is the highest type of voice, and this is the type I want you to have in mind and to try and reach.

In the last lesson you saw that the hyo-glossi muscle and the jaw muscles lie very near together. The hyo-glossi is on the inside of the angle of the jaw and the jaw muscles on the outside. What is more natural than to confound the two, especially since no teacher, no speaker, no vocalist ever realized the importance of the hyo-glossi muscle? The physicians know the hyo-glossi muscle merely as a tongue depressing muscle, but not as a larynx-raising and chord-stretching muscle. Caruso, in his booklet, "How to Sing," says that he feels the tone or the breath on the back of the tongue. He is correct in what he feels, but the terminology is incorrect. He distinctly feels a slight motion in the back part of the tongue; not knowing exact vocal anatomy, he supposes that this motion or feeling is caused by either the tone or the breath.

Neither relaxation nor tension is correct, but strength and flexibility should be acquired.

If I were to tell a student to relax the jaw or the throat, he would at the same time relax also the essential vocal muscles and strong, good voice would become impossible.

I merely call your attention to the right vocal attack so that you will not be conscious of either jaw or throat, or of **any** part of your body, for that matter.

I never say, "**Don't do that!**" but always, "**Do this.**" Think only of the right thing, and the wrong will, in time, be impossible to do.

By now you will know what I mean by "Do this." It is the tongue attack that you must feel so plainly when you speak or sing with the little finger under the tongue. When you strongly feel the "beat" of the tongue, which is caused by the action of the hyo-glossi muscles, you have made a long stride towards the final goal.

EXERCISES FOR LESSON XXI

With this lesson we have come to the most important exercise for the tongue, and really to the last tongue exercise as well. Many other important exercises will follow, but all the exercises that have been given and that are still to come center around the tongue, or, to be more exact, around that mysterious pair of muscles, "the hyo-glossi."

I am sure, from the numerous letters I have received, that many of my students have succeeded in developing a very good voice even now, through the study of the exercises given in previous lessons. I am sure of this because we receive such letters almost every day. Some are even more enthusiastic than I want them to be, because the hardest work is still ahead, but also the greatest promise, the brightest vocal future.

The past lessons have given you considerable command of the tongue and that has helped you as it was intended to do. But as has been frequently pointed out in these lessons, and as will be made still more plain in future lessons, especially when we come to the lessons on "Vocal Physics," the laws of "Resonance and Sound," great strength is demanded and needed to reach the full glory of the human voice.

So far we have planted the seed. It has sprouted. It has grown and is now in bloom, but the fruit is still

to come. To make the fruit sound and sweet and to reap a rich harvest, you must help me with all your might. Upon **you alone** will depend the future growth of your voice, because that growth will be determined by the amount of practice you can or will intelligently do. You have reached the point now where you should use all available time, and practice with the utmost persistence till the full strength has been reached.

The last lesson must have been a revelation to many of my students. It was designed to teach two definite things:

First, that when you employ the hyo-glossi muscle alone, against the thumb's resistance from the outside of the jaw, the voice is stronger and clearer.

Secondly, but that when you stiffen or tighten the jaw at the same point, the voice also becomes stronger.

This illustrates the difficulty of knowing the right attack from the wrong. It shows why there has been such a confusion among even the best voice teachers.

As in the moral law, so it seems to be with the physical law; right and wrong are so closely interwoven that it is often very difficult to decide which is right and which is wrong. In fact, the temptation to do the wrong thing is much stronger than to do the right. By choosing the wrong way, there is most often a quick, immediate result and temporary benefit. The man who is hungry is strongly tempted to steal, because that helps his needs immediately; the way of seeking work is too slow.

Perhaps the chance of being detected is remote, so he feels justified, at least to himself. In a similar way the vocalist is tempted to use his jaw muscles. He is entirely ignorant of the physical laws and feels that whatever helps immediately must be good. In both

the moral law and the physical law, experience is needed to distinguish the right from the wrong. The thief goes to jail, the vocalist loses his voice, and both get the experience which they needed and deserved. However, both acted through ignorance. You now have the knowledge which will enable you to avoid such missteps. There can be no further excuse for you.

To strengthen the all-important hyo-glossi muscle some way had to be discovered to give it resistance—some hold—some grip against which it could contract.

If you merely shut your hand, the finger muscles are not fully contracting because they find no resistance, but if you grip a baseball, then, indeed, your hand can grip with all the power it has.

By pushing the thumb upward against the under jaw some resistance was given the hyo-glossi muscle, but this resistance was not direct enough. In order that the hyo-glossi muscle be given a **firm** support, the tongue must be held up during the silent practice in an artificial way, namely by placing the thumb inside of the mouth and under the tongue. After that process has been learned, the student may use the tongue support which will be sent with a later lesson.

The student must realize that in speaking and in singing the upper part of the tongue is held up by the stylo-glossi muscles. (Figure 30 in Lesson III.) The muscle which extends from the styloid bone, marked 13, into the tongue is the muscle in question. It holds the tongue upward in speaking and singing, thereby giving the hyo-glossi muscles directly under it the resistance or hold which they need. But by practicing silently, we eliminate all muscles, except the hyo-glossi, therefore we must give the tongue an artificial hold against which the hyo-glossi muscles can pull.

CONTRACTING THE HYO-GLOSSUS MUSCLE AGAINST RESISTANCE

Demosthenes, it is related, at first had a very poor voice, a halting, stammering voice that he was ashamed of, and yet he eventually became the greatest orator of his time. When he stood on the seashore or on the

Fig. 128

mountain top and practiced his orations with a pebble under his tongue, he was using, without possessing a knowledge of laryngology, the right method of developing a strong, full and agreeable voice. Without knowing it, he was affording a strong point of resistance to the hyoid muscle. Against this resistance the

muscle was forced to contract and, in doing so, gained strength and flexibility.

THE TONGUE AND THUMB

First: Place your right thumb under the right side of your tongue, laying the fleshy side against the teeth. To do this you must bend the hand inward (not outward) at the wrist. Next pass the thumb along under the tongue until its end touches the last tooth. See Figure 128. During this exercise the tongue must remain relaxed and quiet. Now extend the fingers and turn the hand slowly until they pass the nose and the palm is turned upward. Naturally the thumb under the tongue turned with the hand, so that now the tongue rests on the side of the thumb. See Figure 129. Always be sure that the tongue remains soft and lies as far as possible in its natural position. Next, press the thumb against the inner side of the tongue, forcing it toward the center until it can go no further. About half of the tongue will now be resting on the thumb, which is now pressing against the "hyo-glossi" muscle. This muscle extends from the side of the tongue backward and downward to the hyoid bone and is the muscle we must strengthen.

It is advisable to repeat this exercise until the thumb can be placed under the tongue without forcing the tongue out of its natural position. The entire half of the tongue from back to front must rest upon the thumb. You may have some difficulty at first in keeping the tongue loose and natural, and be tempted to draw it back or move it forward to make room for the thumb. But all such movements must be avoided, as they detract from the desired results.

Second: When the exercise described above is thoroughly understood and the thumb can with ease

be brought into the correct position, extend the exercise to include the following:

With the thumb lift the tongue about one-third of an inch or less, being careful that the **entire** length is lifted and not only a part. The thumb must remain horizontal and the whole hand be raised a little. Again be quite sure that the tongue rests loosely and naturally

Fig. 129

on the thumb without exerting any pressure upon the thumb. Repeat this exercise as frequently as possible.

These two exercises are only by way of preparation for what is to follow, but they must be mastered before it is possible to advance further. If the tongue is even

Fig. 129 and Fig. 130. In order to photograph the tongue and show correct position of thumb, it was necessary to have the tongue protrude. In practise the correct position of the tongue is always within the teeth.

the least bit stiff, the muscles which stretch the vocal chords cannot function, or at best, only with great difficulty, for they find too much resistance. For example if the tip of the tongue is hard and stiff it shows that the "musculi genio-glossi" are active and are dragging the hyoid and "stylo-glossi" muscles forward, thus forcing the tongue out of its natural position. The purpose of these exercises is to train only those muscles which stretch the vocal chords, without allowing the other muscles to interfere. It is only by complete isolation that these muscles can be trained and brought under control.

These exercises may be practiced on either the right or the left side of the tongue or on both sides alternately, as may be convenient. At first use the mirror to notice that the tongue is not drawn backward, when the thumb is under it. Later you can do it without the mirror.

GROOVE AGAINST THUMB RESISTANCE

Third: Place the thumb under your tongue as previously instructed, and raise the tongue by turning the hand partially around until the thumb rests on its side. Then picture the tongue as resting softly and quietly upon the thumb, and try to form the groove in the easiest way. If the groove will not form, assist the process by using the forefinger of the other hand; that is, while you hold thumb under the tongue, also touch or tickle the upper surface of the tongue, to induce the groove; it is advisable to do this anyhow for some time, until the groove can be easily formed. When the groove is correctly formed, the under part of the tongue swells and spreads sideways and downward and you will feel the under surface of the tongue pressing down on the thumb. Remember, the less exertion you use in forming the groove, the better and

more quickly it will be accomplished. In fact, the mind alone should compel the groove to form. See Figure 130. The groove should be deeper than it was possible to show in this figure.

The sideways and downward swelling of the under surface of the tongue is caused by the contraction of the hyoid muscle. As long as the tongue remains quiet,

Fig. 130

this muscle is lax and hidden, but as the muscle contracts it becomes thicker; this explains the swelling and the slight pressure on the thumb.

Explanation: When the tongue is raised by the thumb, the hyo-glossus muscle is also raised; the thumb gives it a support and supplies the necessary resistance

against which it can contract. But as the upper end of the muscle which is attached to the tongue, is prevented by the thumb from drawing the tongue downward, the lower end of the muscle which is attached to the horns of the hyoid bone must draw the horns upward. In this position the front part of the hyoid bone is tilted downward and the horns raised upward. You can easily prove this for yourself by placing a finger under the front of the hyoid bone just under the jaw, and feeling the swelling against the finger.

DRAWING THE TONGUE BACK

Fourth: Place the thumb under the tongue as before. With a finger of the other hand touch the tongue very lightly both at the tip and at the back near the throat, to make sure that the tongue is quite soft and lax. Then draw the whole tongue back about a quarter of an inch. This must be done very gently so that the thumb under it does not feel the slightest pressure. While drawing the tongue back and also after it is drawn back, touch it repeatedly to make sure that the upper surface remains as lax as before. In all these exercises the tongue must remain soft. That is the fundamental condition to success. This exercise is given merely to show you the tendency of the tongue to shorten, during the formation of the groove, and it need not be repeated once you understand the action.

ISOLATING THE TONGUE

It must be emphasized again that in all the exercises, care must be taken that only the hyoid muscle is exercised, for any assistance on the part of the other muscles will delay its growth and deprive it of strength. When you have become accustomed to the exercise with the thumb and are **sure** that the groove is always

formed far back, as well as in the center, lay the forefinger under the cricoid cartilage and the thumb of the other hand under the tongue, and be sure that the cricoid cartilage remains in the natural position while the groove in the tongue is formed and the tongue is relaxed again.

Fig. 131

It is very important that the pressure of the tongue be felt especially on the end of the thumb and not only in the middle, as frequently occurs.

THE HYOID BONE STROKE

Lay the forefinger under the hyoid bone in the angle made by the chin and throat and then form the tongue groove, first without the finger, then with the

little finger and then with the thumb and notice that the front of the hyoid bone strikes the finger each time that you make the groove. See Figure 131. Next, speak the vowel a, e, i, o, u. With each vowel the hyoid bone will involuntarily strike against the finger. If the hyoid bone rises toward the throat cavity, that is proof that the all-important hyoid muscle is too weak and that it still needs much exercise.

In spite of what I have said against drawing the whole larynx up or down, a certain downward stroke of the hyoid bone is not only permissible but absolutely necessary in a large tone, and this stroke occurs automatically as soon as the tongue has gained sufficient strength.

To avoid misunderstanding, I wish to state that it is very easy to lower the hyoid by means of the throat muscles, but this is injurious. As mentioned above, a downward stroke of the hyoid bone against the finger is noticeable, and yet the hyoid bone is not drawn downward. Just the opposite is the case. The horns are drawn upward and the bone is tilted, therefore the front strikes downward without really being lowered. The action somewhat resembles the balance beam of a druggist's scale; when one side goes down, the other goes up, but the center of pivotal point remains at rest.

This is not an exercise which you need to practice. It is merely a test to show you that the hyoid bone can be moved either by the tongue muscles, which is the right way, or by the throat muscles, which is the wrong way. If it does not move, you are still tensing the palate muscles while making the groove. If you drop the upper part of the tongue loosely enough in the middle and near the throat, then the palate will remain still.

You must master all these points. Continue practicing until you do master them.

5. Having succeeded in making the groove without moving either the cricoid cartilage or the palate, that is the uvula, place a little finger under the tongue, near its center, as taught in earlier lessons.

Again make the groove, testing once and awhile the cricoid cartilage, and observing also that the palate does not move. Notice that every time you make the groove while the little finger is under the tongue, that you feel a "beat" or soft pressure of the under side of the tongue against the finger. That is the correct and "infallible" attack.

6. Count or read aloud and notice that every time you feel this beat, the voice is strong, clear and good.

Singers should sing the scale, starting about B flat on the third line. Every time they feel the "beat," if made with utmost ease (as taught in groove without voice), the tone is strong, good and easy. Now they will arrive at a note, usually about F on fifth line, when the beat is not felt and the tone is less good or the throat is not free and easy. That is a **sure** sign that they have reached the present limit of their strength. To reach the upper notes, this strength has to be increased.

In order that this strength may be increased, the hyo-glossi muscle must contract against a resistance, and for this purpose the thumb is placed all along the entire half of the under surface of the tongue, as far back as the lower wisdom teeth.

It may take some of you several days to become accustomed to placing the thumb under the tongue and to holding it there while the tongue lies loosely and quietly upon it. A few of you may have a very thick

thumb, too thick to pass under the tongue; these should use the forefinger of the opposite hand and lay it far back under the tongue.

7. Having acquired this exercise, simply make the groove in the manner so often described. Notice that the back part of the tongue, gently, easily falls or presses down upon the tip of the thumb or finger. Once in a while test the cricoid cartilage to see that it does not move while you are making the groove.

Many will be tempted to press down with the tip of the tongue. That must be avoided at all costs. The front part of the tongue **must remain loose.** This is especially important as you gain more and more strength. Keep the front part of the tongue loose as long as you practice; **this is imperative!**

Most of you will be tempted to press down hard with the tongue. Do just the opposite. Merely let your tongue drop loosely on the thumb. Let it rest there a second and then relax, when the tongue will jump to its natural straight position.

Remember the lesson on the jaw muscles. If you press down hard with the tongue, you are really contracting the jaw and not the tongue.

8. Practice this lesson with the thumb under the tongue as much as you can. You have reached the all-important point now. Do not cease practicing. Keep at it every time you get a chance. The end will richly repay all your trouble. Do not be afraid of over-taxing the hyo-glossi muscle now. It cannot be injured. You may get tired or even a little sore, but that will disappear. Any muscle that is being exercised may get tired or even sore at first.

If you only make the groove **easily** enough, you can do yourself no harm. Be sure that the thumb is

always clean and that the nail is short, so as not to scratch the tongue.

I have had students who made the groove against thumb resistance 7,000 times daily. This may seem to take very much time, but it can in reality be done in less than two hours. Do what you can, is all I ask.

If you were standing on ice, hardly thick enough to hold your weight, and you were to try to hold an additional weight of ten pounds only, the ice would break and you would disappear in the water. But if the ice were thick and strong you could assume considerable additional weight without fear of breaking through.

If your tongue is weak, it cannot resist the pull of the other muscles and breaks down under the strain. You must wait until the ice (the hyo-glossi muscles) is strong and then your voice will be strong, beautiful and free.

With a later lesson you will receive my patent tongue support. Wait for some time before using it. First get accustomed to the groove against thumb. The thumb support is just as good as the mechanical support.

The tongue support, or fork, must be inserted under the tongue so that it lies easily in the mouth. After you are accustomed to holding this under the tongue, hold the stem firmly in one hand and hold it so that the tongue is lifted about one-third of an inch or less. Hold it in that position while you make the groove as taught. It is exactly the same exercise as with the thumb under the tongue, so if you prefer to use the thumb only, you may do so.

Everybody needs this exercise. It is the only infallible way of strengthening the tongue and through it the throat. Keep it up for many years.

Gradually this exercise will become automatic and will assert itself during voice. This is especially important for the stammerer and on this exercise the next lesson, especially written for defective voices, will be based.

EXAMINATION QUESTIONS ON LESSON XXI

1. Why should the voice student understand the false action of certain muscles?
2. Where are the voice-interfering muscles attached?
3. Are the false muscles stronger than the true vocal muscles?
4. What is the greatest muscular fault of vocalists?
5. Is relaxation a correction of false muscular habits?
6. What is the correct condition of a muscle?
7. How is a muscle made stronger?
8. Can you place thumb under the tongue?
9. Can you make groove against thumb?
10. Do you feel the groove strongly against the tip of the thumb?

LESSON XXII

A SPECIAL LESSON ON STAMMERING, STUTTERING, ETC.

This lesson has been written especially for the stammerer and for all defective voices, but the singer and speaker should study this lesson as closely as the stammerer, especially the part which treats of the vowels and consonants.

Much poor speaking and singing is due to indistinct, slovenly and careless articulation of words and syllables. Correct articulation will allow a free flow of sound and, hence, beautify the voice. Slovenly articulation will hold the muscles either too stiff or too loose.

Careful study of this lesson will demonstrate that the voice is one thing; articulation another. The two will assist each other if the muscles are left in a free, flexible state.

Yesterday I received the following very interesting letter:

"I am in receipt of your literature and contents carefully noted. I am impressed, hence this letter.

"I am a **medical** student of the University of ——, College of Medicine, and for ten years I have gone through a "living hell" with **stammering,** the causative agent. It cost me a small fortune to secure relief. I attended stammering schools all over this country, was in Europe, consulted numerous physicians and physiologists, but all to no avail. When I say, Mr. Feuchtinger, I am discouraged, I believe you can understand **why.**

"Either the schools were fraudulent, or if the men were sincere, they could not produce results. Dr. Scripture of Columbia University is a stammering

expert, but I never heard of him as having produced a cure. I am not a bad case, as my chief difficulty is that I get a spasm in my larynx and my throat becomes 'tied up,' as it were. You are correct when you state that most cases are due to inability to control the tongue and the larynx muscles, but when you state you can cure it, I am not only **skeptical** but **superskeptical.** No offense is intended, but I have met men who gave convincing (?) explanations as to the etology of the disease (?)—explanations that could not be attacked and yet who failed to cure.

"Now, Mr. Feuchtinger, I don't know how you will favor what I now have to state, but it is the **only** way through which I will take your treatment, so please follow me closely. I have consulted with my Professors here—to take up your treatment. I will do so if you will send it to me or through the University, for a trial. If after some time I find it benefits me, I will pay you your fee and in addition bring your discovery before the American Medical Association and have it introduced amongst physicians and recognized. You can easily see what business and fame this would bring you.

"Under no other circumstances will I accept any treatment, as in **every case I** was the loser, and I cannot afford to lose again."

To this letter I sent the following reply:

"I am in receipt of your very interesting letter of the 8th inst. Since you are a medical student, it gives me the opportunity to speak to you in professional terms.

"You say you have attended stammering schools all over this country and in Europe, consulted numerous physicians and physiologists without success to your-

self. I can easily understand that you are discouraged, and sympathize with you.

"No, I don't believe that all of the schools were fraudulent; the reason they could not produce results was simply because they did not understand the mechanism of the vocal organ. The same must be said of many physicians and throat specialists. They have looked at the throat merely from the point of view of the operating table, and not in a constructive sense from the point of view of the vocalist.

"The supposition heretofore has been that the vocal chords are tensed or stretched as needed for speaking and singing by the internal laryngal muscles. The internal laryngal muscles can stretch the vocal chords only to a very limited extent, certainly not sufficient for a full speaking or singing voice. To hold the vocal chords at the tension needed for speaking and singing, Nature has given us the **external** laryngal muscles, and of these the hyo-glossi and chondro-glossi muscles are the center or keystone.

"If these muscles are weak, or, as is mostly the case with stammerers, if they are not under control, if they are displaced or held stiff, the entire vocal organ and throat is made rigid and unyielding. Of course, speech is impossible, or at least very difficult under such circumstances.

"When you say that you get a spasm in the larynx, and your throat becomes tied up, you are perfectly right, only the spasm is not caused by the larynx, but by the tongue.

"I don't blame you in the least for being super-skeptical, but if you refuse to accept a new statement, and reject a new discovery because you have not succeeded with old methods, you remind me of a man who in a large city, asks several strangers to direct him

to a certain place. They, not being very sure themselves, direct him as best they can, with the result that he did not reach the place to which he wished to go.

"Now, wouldn't it be foolish for this man to tell an old inhabitant of the city, who offered to direct him, that he was a liar and, rather than try the new directions, keep on running around the circle, and never get anywhere?

"I cannot accept your proposition to send you our lessons on trial, as it were, for the simple reason that these lessons are issued only gradually. It will take longer to study the course by mail than it would if I had you here personally, and to make sure that you understand every lesson, we issue them through an entire year.

"The lessons will teach you all about the voice and give you exercises enabling you to acquire control over the all-important tongue, the larynx, the palate, and the breath; all of these things take time. Sometimes improvement is noticed almost immediately, but again, in other cases, it takes considerable time. In **all** cases, however, we guarantee an improvement and a final cure, provided the student completes the work.

"Sometime when you have an attack of stammering, place a forefinger far back on the top of the tongue. You will then notice that your tongue is drawn high up and that it is very hard. Also look at your tongue in the mirror, and you will find that when you stammer the tongue is drawn back from the teeth. Both of these tests are absolute proof that at the time of stammering you have dislocated the entire tongue, and this is the cause of your stammering.

"Another proof that my contention is correct, is that I presume you to have a very good, full voice when you speak naturally. Very likely you have even a good singing voice. All this should be of great encouragement to you. It shows that your tongue muscles are really strong, and that all you need do is to gain control over them.

"I could guarantee you an absolute cure as soon as you have control over the tongue muscles, but the matter of habit enters so largely into cases like yours that it may, after all, take considerable time before you could pronounce yourself absolutely cured. But as soon as you have the control, you have positive proof, which you can feel, see and hear. After that, it would be up to you to get into the right habit.

"Since you mention Dr. Scripture, I wish to tell you that I have read his work with great interest. But I find that he, like other physicians, has neglected to observe the mechanism of the vocal organ. Hence, his deductions on vocal physiology are entirely erroneous. What he writes about resonance is very interesting indeed, and most scholarly, but of no practical value for the vocalist. Resonance is the result of a good tone, and not, as has been supposed heretofore, the cause.

"The teachers of physics have put the cart before the horse. When you have a good tone, you also have resonance. Seeking for resonance never developed a good tone, but only a disturbance.

"I trust I have explained the matter to your satisfaction, and hope that you will give my method a trial."

Now read the following extract from an article by Dr. W. A. Evans in the Chicago Tribune, 1915:

"Most cases of stammering and lisping can be cured by the mother. The method is simple. She must con-

tinually pronounce the words which the child mispronounces and have the child repeat them after her. Rewards, including a judicious use of praise, must be made use of.

"If the mother cares to read some book on speech defects, such as that by Scripture, and learn just how certain sounds are made, she will be the gainer by doing so. She may learn words which her child can pronounce correctly, which words call for about the same operations in the speech organs as those which the child speaks incorrectly. All of this is for the mother. In training the child the mother speaks correctly some troublesome words and other related words, and the child repeats them.

"Stuttering is a different matter. Stutterers can make the necessary sounds. The trouble is in forming the sounds into several syllable words and into sentences. The seat of the trouble is the mind.

"Stammerers and lispers are at their worst between two and five years of age. The mother can cure the average stutterer of his defect. Why? The need is for some way to slow down the excited, nervous child. To make him think slowly, act slowly, speak slowly; to teach him not to begin to speak until his thought is formulated, and then to say his words with deliberation.

"The stuttering child has a disposition to do everything half-cocked. If it be granted that the cause of stuttering is in the mind; if the needed cure is to train the child to be deliberate and calm, does it not follow that the mother is the best teacher? Bluemel is right. The majority of children who stutter, stammer and lisp could be cured by their mothers. However, there are children who stammer because of adenoids, tonsils,

or other defects, and children who stutter because of mental or other trouble. Such need the help of physicians and speech specialists."

This was taken from the New York Sun, 1915:

"More than forty thousand public school children who stutter, stammer, lisp or have the 'tic' defect in their speech are to be specially looked after, with a view to making them normal, under a resolution adopted today by the Board of Education, at the suggestion of Dr. Dennis J. McDonald.

"The plan is to give every teacher who has speech-defective pupils, special medical instructions as to how to control and cure these defects.

"Dr. McDonald said that it is likely that one or two terms of special instruction, so arranged as not to interfere with regular school attendance, will be sufficient to convert the average boy or girl stammerer, or lisper, into a child of normal speech, with much brighter prospects in the world."

Dr. Joseph C. Burk, Chicago, says in the Journal of Ophthalmology, Otology and Laryngology of Philadelphia, Pa.:

"The tongue-tie was formerly thought to be a cause of speech defect, such as lisping, stammering, or stuttering, but this is now discredited. Tongue-tie was considered a shortening of the fraenum of the tongue. Any diseased condition of the tongue itself can affect the speech and appropriate treatment of such a condition will be necessary. The cheeks and lips are often at fault in speaking or singing in that the muscles are insufficiently developed or trained. By proper action and passive exercise, much will be accomplished."

Dr. Smiley Blanton, Madison, University of Wisconsin, in the same Journal says:

"Even the education of physicians toward speech defects has been so neglected that often they advise against any treatment. As a result of this lack of knowledge on the part of the physician, sufferers from this defect have flocked to the stammering schools and the non-medical 'Speech Specialists' who, in most cases, are quacks of the worst kind, guaranteeing cures which they cannot always obtain."

Dr. C. S. Bluemel has this to say of these schools:

"Many of them are entirely devoid of merit; they have been recorded merely because they are the gold bricks that are daily sold to stammerers by an infamous fraternity of speech specialists."

Dr. W. A. Evans, of the Chicago Tribune, says:

"The great secret guarded by speech specialists is the fact that the stammerer is being buncoed.

"I believe that if the child, during the early school years, were given some training in normal and corrective phonetics, and a few simple exercises in voice training, that is, exercises for the development of a good tone, change of pitch and inflection, a great many of the speech defects could be avoided altogether and the average child's speech could be greatly improved."

The best and most vigorous statement of the case is given by Dr. Burton Haseltine, Chicago, in the same Journal:

"No discriminating critic can study the results of voice training even in our best schools with any feeling of satisfaction. If we examine the literature of the subject, we arrive almost at the stage of hopelessness. Perhaps any attempt to teach a so subtle art by means of text books is hopeless, but at least a discussion of

the subject should be free from silliness. Much of the material found in supposedly standard books upon voice culture is almost unbelievably silly.

"One 'teacher' tells us that there are three lobes of the lung—one for the lower, one for the middle and one for the upper register in singing! From the superior register, he says, we have the high-pitched tones of the voice, because they originate from the small and short air-column supplied through the superior branch of the bronchial tubes. This is the extreme of silliness, but notions only a little less fantastic can be found in almost any book upon this subject. The false conception of low tones as 'chest tones' and high tones as 'head tones' is almost universal, many writers even placing head tones as far upward as the frontal sinus! The truth, of course, is practically the opposite of this, since the highest notes are those in which the head cavities are used the least, while the frontal sinus is the one cavity that has no effect whatever upon vocal resonance.

"One of the world's greatest singers tells us in a well-known book on 'How to Sing,' that the pupil must learn enough physiology to know how to draw the soft palate up against the hard palate.' Again this writer says: 'The palate must remain elastic from the front teeth to its hindmost part.' It is difficult to understand how anyone can imagine the palate near the front teeth as being elastic, while a person who could draw the soft palate up against the hard palate without a surgical operation would be remarkable indeed.

"These and many other confused statements seem to result from the attempt of an artist without physiological knowledge to describe the complex act of singing merely from the sensation experienced. Great mischief results from the notion that exceptional sing-

ers are reliable instructors in voice physiology and voice training. It is exactly as if the juggler or acrobat should assume to teach physiology, hygiene and medicine because he can make his body perform feats impossible to scientific men.

"If now, we look at the other side of the picture we find it not less gloomy. What have the physicians taught us about the art of voice development and what aid have the specialists to offer the aspiring artist? Very little, we must confess. In certain of the grosser abnormalities effective and safe treatment is now being given, but so much of bungling has been done that the vocal artist will long stand in just fear of the throat specialist. If we are called upon for instruction or advice regarding the normal development of voice or its correct or incorrect employment, our resources are indeed meagre. It would seem apparent that the first requisite for instruction in the subject is a thorough knowledge of the anatomy, physiology and the acoustic principles involved in voice production. The individual well grounded in all these matters is exceptional both among physicians and voice teachers. Neither is there any school of music or of medicine where adequate instruction of this kind is given.

"When you now turn to see what remedies in the past were applied to the cure of stammering, you find very little of real value. The physicians, on one hand, claimed stammering as a purely nervous disorder. The schools and teachers generally based any remedies they proposed, upon corrective phonetics, breathing or speaking in certain rhythmical sentences. Imitation and suggestion played an important part. All these things are of some value, but they do not go to the real root of all defective voices; hence a cure was problematical at best."

EXERCISES FOR LESSON XXII
For Those Who Suffer From STAMMERING, STUTTERING, OVERLAPPING OR LOSS OF VOCAL CONTROL

It is quite generally supposed that stammering and similar afflictions result from a diseased condition of the vocal organ. In some cases this may be true, but it is not generally so. I have had many cases that were paradoxical; persons whose voices were full and sweet and flowing while they sang, and who none the less stammered when speaking.

In all of these cases I found a naturally strong tongue. This discovery convinced me that these people were singers without knowing it, and that very little was necessary to make them even great singers. My conviction was confirmed when, upon testing the voice, I found that they had fine, full tones up to a certain pitch, but after reaching that pitch were unable to utter another tone, either good or bad. They could automatically stretch the vocal chords up to a certain point, beyond which they could not go. They were really between the upper and nether millstones. In ordinary speaking, the voice over-topped or over-ran their needs and thus confused them, and prevented a free, easy flow of words.

In attempting public speaking they would, at critical moments, lose control and the words would fail to come because the organ stopped working. In these cases the foundation or tongue strength was there and all that was necessary to perfect the voice was a little more strength of the hyoid muscle to increase the range, and a certain mental control to prevent the flow of excessive power in the ordinary conversation. If your affliction belongs to this class, your progress

will come from persistently practicing the thumb and tongue exercises and by speaking only from the tongue. The exercises which I shall give here will serve to give you the required control and hasten your progress. If you follow them, you will **soon** notice a **marked** improvement.

Stammering also results from a weak, slow-acting hyoid muscle, when this muscle belongs to a person possessing a quick-acting brain. In cases of this kind the thoughts flow rapidly and the organ of speech works slowly, with the result that before one word is fully uttered, the brain is forming the tongue for another. This causes confusion and a piling up of the words, some formed and some half formed, and the control over speech is lost. After this has occurred a number of times, fear steps in and makes things worse by destroying the person's confidence. Then the law of habit takes a hand and makes this unpleasant condition permanent. Unfortunately, it is just as easy to acquire the habit of doing a thing in the wrong way as it is to get the habit of doing it in the right way. In all cases of defective speech, I have found it necessary to keep the person persistently doing the right thing until the old habit is broken up. Once that has been accomplished, the right way becomes automatic and there is no need to give it further thought, for it is then a habit.

If your case belongs to this latter class, follow carefully all the exercises given here and also those given in previous lessons. Your progress will not be as rapid as that of those who belong to the first mentioned class, but it will be **certain** and **permanent.** If you consider the length of time during which you have been controlled by the wrong habit of speaking, you will not expect to have your vocal organ and vocal

muscles rebuilt in a few months. If your voice tires easily or your breath is soon exhausted, or the words are formed slowly, you can be certain that you belong to this latter class and you should therefore practice faithfully the following exercises.

First: Most people who have defective voices are also troubled with shortness of breath, and because of this, they are tempted to hold the diaphragm and other breathing muscles stiff. If you tire easily in the region of the stomach, you will know that you have this fault. To correct it, you must study and master the breathing exercises given in these lessons and learn to relax the stomach muscles.

Second: As already described in Lesson XI, place the little finger under the point of the tongue and speak or read aloud and observe whether you feel the beat of the tongue and whether it continues all the time you are speaking. If the beat is not continuous, you can be sure that your tongue muscle is very weak and that you need to practice the tongue exercise with the thumb's resistance, several times a day. Practice each time until the tongue muscle becomes tired.

You must also do some reading aloud every day, with the little finger under the tongue and also without it. Always think of the tone or voice as coming out of the tongue. Also think of the tongue as grooving slightly at the back while speaking, and, when you pause between the sentences, notice that the tongue relaxes, only to contract again the instant you begin speaking. Try to speak a little higher in pitch than you do ordinarily and never attempt to start the voice from the chest, or still worse, from the throat. All tones should spring from the head, and they will do so if you speak from the tongue.

HOW YOU SHOULD NOT SPEAK

People with large vocal chords speak in a lower pitch than those with smaller chords. The low tones seem to come from the chest, but in reality they originate and resonate from exactly the same place as the higher tones. Those having small vocal chords cannot get the deep tones by speaking from the chest, no matter how hard they try. Note the following signs of a falsely produced voice:

Third: Place your index finger under and against the ring cartilage and read or speak in your usual manner and observe whether this cartilage remains quietly upon your finger during speech, or whether

Fig 132

it pushes downward. See Figure 132. If there is a decided downward pressure, then you can be sure that your manner of speaking is wrong.

Fourth: Lay your finger tip lightly against the thyroid cartilage (Adam's apple) and read or speak as before. See Figure 133. If this cartilage is drawn upward away from your finger, then your manner of speaking is wrong. In a healthy, normal vocal organ the entire larynx remains in its normal position during speaking.

Fifth: Clear your throat several times as though you were trying to raise a little phlegm, and observe that this action creates a feeling as though there were

Fig. 133

two little pads of flesh deep down in the throat that came together and closed the throat and then separated again after the clearing. What you feel are the vocal chords. Now speak or read aloud and watch closely to ascertain whether you speak from this place. If you do, your vocal habits are wrong. Although the voice originates in the vocal chords, you should not be conscious of their existence. If you feel them, it is because they are rubbing against each other and creating an interference. When speaking, you should feel the voice coming from the tongue or head, but should not be conscious of any other parts of the vocal organ.

Sixth: Turn your back to a window, open your mouth, and with the hand mirror observe your throat. Look carefully at the tonsils, which lie just back of and on each side of the tongue. Then place a finger well back on the top of the tongue and hold the tongue down while you whisper several times "haw." If you do this very softly, you will find that the two tonsils approach each other as though they were trying to close the opening to the throat. Try this several times to make sure that you understand the movement. With your finger still on the tongue, speak "aw," "a," "ee," several times. By means of a little pressure from the finger, prevent the tongue from rising, that you may clearly see in the mirror the action of the tonsils. Now, if the tonsils try to approach each other when you speak "aw," "a," "ee," you can feel certain that your vocal habits are **inclined** toward correctness, but if the tonsils move farther apart as though they were trying to open the throat still more, then your vocal habits are wrong.

All the above signs of a wrong vocal attack are proofs that the tongue is either naturally too weak or

that wrong habits have wasted its natural power. I have emphasized throughout my instructions that in the absence of the stroke under the tongue neither good speaking nor good singing is possible. This applies even more strongly to those who stammer or stutter. If this beat is lacking, you must keep up the tongue exercises and in your regular conversation try always to speak from the tongue, that is, speak as though the words rested upon or came out of the tongue. It is only by getting this control that a **permanent** cure can be effected.

LARYNX AND PALATE MUSCLES

To train the larynx and palate muscles and obtain control over them, you should practice the following exercises:

Seventh: By means of a hand mirror observe carefully the throat around and behind the tongue, and especially the tonsils. Place a finger upon the tongue as far back as you can without causing nausea. Hold the tongue as loose as possible and by a pressure of the finger prevent it from rising. Then breathe out or whisper "haw" as silently as possible, and notice if the tonsils draw toward each other and if the arches behind the tongue become narrower. Try to whisper "haw" gradually higher and higher, but **very easily,** just as easily as you can bring two fingers together. If the palate muscles move apart instead of toward each other, it is a sign that they are almost wholly inactive. If they were active, they would contract and shorten, and thereby narrow the arches. Persist in the exercise for bringing the tonsils and arches nearer together and after one week whisper the vowels (a, e, i, o, u) as well as you can, both with and without the

finger on the tongue, and later speak them aloud. Repeat this as often as you can each day, but for only a few minutes at a time. Always use a mirror so as to watch the action of the tonsils.

Eighth: Place the soft point of the thumb against the ring cartilage and yawn silently several times. See Figure 132. Notice that this forces the cartilage, and with it the entire larynx, strongly downward against the thumb. Now try to make this pressure on the thumb without yawning and without any exertion, by mentally ordering the action to take place. When you can master this, first whisper, and later speak aloud the vowels and still later, sentences, and expect that this cartilage will remain quietly upon the thumb without movement or pressure. It should remain steadily in its natural position. In speaking be careful not to speak from the throat. The voice should sound clear and bright and as if coming from the head.

VOWELS

Place the little finger under the tongue and while you sound "awh" expect the tonsils to narrow and also expect to feel a slight pressure on the little finger. The pressure on the finger and the narrowing of the arches are absolutely necessary. Therefore, practice until both actions are definite.

"A" as in "Pale"

Repeat as above, but sound "a" as in "pale," but in addition to having the little finger under the tongue, also place forefinger of the other hand on the top of the rear part of the tongue and note that the forefinger is being raised by the tongue.

"E" as in "Eel"

Repeat as before, but sound "e" as in "eel." In this case the finger will be raised still more and the tip of the tongue drawn away from the teeth. In arching upward, the tongue becomes shorter and therefore will draw a little away from the front teeth. If you find difficulty in pronouncing the "a" and "e," then practice the following exercise for about five minutes at a time. This exercise will train the tongue-raising muscle.

Exercise for Raising the Tongue

Open your mouth and take care that the tongue lies loosely between the teeth.

Next, sound several times "kh," "kh," "kh," and take care that the back part of the tongue is raised every time that you sound "kh."

Now place the forefinger of one hand on the top of the tongue, alternately on either side; press the forefinger somewhat strongly down upon the tongue upon its own side. Sound "kh" and you will find that in spite of quite a heavy pressure of the finger your tongue will rise upward. Of course, you must not press so hard as to prevent the tongue from rising while you sound "kh."

Practice in the same way for "e" as in "eel."

"O" as in "Pole"

Begin by forming the mouth as for "awh." First whisper and then speak "awh." While sounding the "awh" endeavor at the same time to bring your lips into a round position to form "o" as in "pole." If you find this difficult to do, place two finger ends against

the corners of the lips and sound the "awh," at the same time drawing the corners of the mouth in against the resisting finger ends until "o" is formed. See Figure 134. Of course, during this lip-shaping exercise, you do not place the finger on or under the tongue. When you can form the lips correctly, without the help of the finger ends, then make the sound with the finger under the tongue, as previously directed.

"U" as in "Rude"

Practice exactly as instructed for "o," but now expect the lips to close still more tightly against the rather strongly resisting finger ends and sound "u" as in "rude."

Fig. 134

"A" as in "Fat"

Begin as for "awh," but as you go into this "a" gradually widen the mouth and sound "a" as in "fat." The tongue will be raised somewhat, but that is as it should be.

CONSONANTS

I must again emphasize the fact that in normal speaking the consonants and vowels are enunciated by the involuntary action of the vocal muscles; the will to speak causes them to move automatically. When these muscles do not act automatically, a voluntary contraction must be used to gradually encourage the involuntary action. When this is accomplished normal speech results.

The consonants which follow should be studied, one at a time, and especially those which are most difficult for you to pronounce. For the consonants I shall not give special instructions on the movement of the lips and tongue, because the desire of the mind will, of itself, induce the action of the proper muscles. However, the correct position will be more readily attained if you do not end them with a vowel sound, as is usually done. For instance, do not pronounce "k" as "kay," or "b" as "bee," nor "l" as "ell," nor "f" like "eff," but as I shall here explain.

Ninth: Seat yourself comfortably. Take in breath and at the same time raise your shoulders and let the body and head droop forward, just as though you were too tired to sit upright. Remain in this loose, relaxed position and hold the breath for about three seconds, then suddenly resume the upright position, at the same time letting go of the breath. If you do this loosely enough, the breath will sound like a "hugh," and this "hugh" should terminate each consonant, so

that, for instance, "k" will not sound as we usually say it, "kay," but "kugh." In this way only the muscles which form the consonants are employed, and no others.

The consonants B, C, D, F, G, H, K, P, Q, T, V, W, X and Z should be practiced, finishing them with a "hugh" sound like B'ugh, C'ugh, D'ugh, etc. The consonants L, M, N, R and S must be practiced as though there were an "h" before them and "hugh" concluding them. H'lugh, h'mugh, h'nugh, h'ungh. The "S" is best practiced when it is pronounced like "h'zzugh."

Practice all the vowels and consonants in the manner described, first without and then with the little finger under the tongue, and always as if you were talking from a distance, as if you wanted to be heard in the next room. In speaking sentences, speak as if you were spelling each word, but so that you connect the consonants with the vowels. The following sentence: . . . "and, behold, a door was opened in heaven, and the first voice which I heard was, as it were, of a trumpet talking with me, which said, Come hither and I will show the things which must be hereafter" . . . should be read aloud somewhat like this: "and'ugh, behold'h, a dorr'h was'h opened'h in'h heaven'h, and'h the'h first'h voice'h which I'h heard'h was'h as'h it'h were'h of'h a trumpet'h talking'h with' me'h which said'h, Come'h up'h hither'h and'h I'h will'h show'h thee'h things'h which must'h be'h hereafter'h." . . .

All the consonants which finish a word should end as in "hugh." That means, do not stop the breath with the consonant, but let it escape. Also try to start the **beginning** consonant in a word with an aspirated "h." Gradually read a little faster and

faster until you can read in a smoothly running manner. If you have practiced carefully, you will notice that although the words are connected, as in natural reading, yet each syllable is distinct and individual. It is essential that you never stop the breath, but speak on until all the breath is gone. Of course, this will require frequent inhalation, but gradually your vocal organ will gain strength and in time will work rapidly and easily. Then little or no breath will be lost and your syllables will remain distinct. Practice alternately with little finger under the tongue, and without, and do this for many months.

Do not forget that the tongue exercises must be repeated often and continued possibly for many months, for upon the tongue's strength rests the ability to speak well. When the tongue has attained sufficient control and strength, all difficulties of speech will have disappeared. Persevere, for the reward of a beautiful, full, freely flowing voice is worth many thousand times more than the effort it will cost to obtain it. What is worth having is worth working for. Success comes to all who persevere with these exercises, for this system of vocal development is founded upon natural laws.

I advise you to read the following frequently. First, always read aloud and distinctly with the little finger under the tongue, then without, and so alternately. If you can read this passage fluently you are certainly cured.

By P. R. Galligan

"The rabbit is a timid thing, its wonted trepidation, the consequence of pondering abrupt annihilation. The constant fear of lurking foe creates a perturbation which in the rabbit's brain we know as lococerebration, a mental state one may detect in men of furtive habit,

who, though suspicious, ne'er suspect their kinship with a rabbit.

"The rabbit is a stupid thing, its nervous excitation apparently engendering a hyperobfuscation. The sunlit aisles of hill and dale escape its observation; it blindly takes the darkest trail to reach its destination. Some men there be with greed of gain and eagerness to grab it who covertly their goal attain much as the fearful rabbit.

"The rabbit is a foolish thing, its love of depredation quite frequently contributing to its own extirpation. The pillage of a cabbage patch provides a delectation which nothing else on earth can match in bunny's estimation. To 'kill' a good thing since it's free or otherwise to crab it is not a fault exclusively peculiar to the rabbit.

"The rabbit is a selfish thing of sordid inclination; it cares not so the seasons bring its share of vegetation. Save as the common weal affects its personal salvation, the common weal in all respects is just a botheration. A concept of the social state wherein men likewise stab it, unconscious that they intimate the logic of the rabbit.

"The rabbit is a wicked thing responsive to temptation, a wanton creature weltering in bestial dissipation. Though occupied with diligence in fecund propagation, it treats with but indifference the second generation. Forsooth, the moral of this tale, if one presume to blab it, is merely that the human male has nothing on the rabbit."

All stammerers must remember that for years, perhaps, they have had the bad habits which produce stammering. The only way to get rid of a bad habit is to replace it with a good habit.

To acquire a new habit may take time and certainly needs practice and constant watchfulness. Surely you will make the effort!

EXAMINATION QUESTIONS ON LESSON XXII

1. What is the physiological cause of stammering?

2. Do you believe that the mental disturbance of the stammerer is caused for the most part by a defect of the vocal organism?

3. Is your voice, when you speak or sing normally, strong or weak?

4. Are you absolutely sure of having succeeded in isolating the hyo-glossi muscle?

5. When you make the groove, do both palate and larynx remain absolutely immovable?

6. Do you feel a distinct beat against the finger under the tongue, when the groove is made?

7. Do you feel a distinct beat on every vowel?

8. Do you feel a distinct beat on every consonant?

9. When you speak, does the cricoid cartilage move perceptibly or is it quiet?

10. Can you now read "The Rabbit" without stammering?

Remember

No real progress can be expected until you have isolated the hyo-glossi muscle, as taught so often! Now and then review Lessons VI and XI.

Do not fail to do some reading aloud every day, first with little finger under the tongue, then without. You must gain the habit of speaking from the tongue, otherwise no cure is possible.

LESSON XXIII

A RECAPITULATION OF THE POINTS YOU HAVE STUDIED

In the course of corresponding with my students, I notice that some of them seem to lose sight of the object of these lessons. They forget the main facts, the real reasons for these lessons, hence a restatement of the object of these lessons is given.

Please read this lesson very carefully, and make frequent reference to former lessons when points are mentioned that are not perfectly clear. I am sure you will agree with me that this recapitulation is very helpful when studied closely.

THE PERFECT VOICE

The purpose of these lessons is to demonstrate and prove that a perfect voice, that is, a voice which will meet all demands of volume, beauty and compass, can be attained only when the instrument which produces it—**the Vocal Organ**—is perfect in all its parts.

A vocal organ that is imperfect cannot be made perfect through the mere action of singing or speaking, because, in speaking or singing, the various parts of the instrument can only do what they are **then** capable of doing. As a rule, an imperfect vocal organ is defective only in one part, but because of this one deficiency the action of the whole is affected, and all parts are thereby weakened.

The mere singing of scales or reciting of passages from memory cannot develop the voice to any great degree, in fact, it usually has the opposite effect. Why? For this reason: The singer does not know in what particular part of his vocal organ the weakness lies. He

may sing very well up to a certain note, usually to F on the fifth line, after that the tones become hard, sharp, or shrill, or faint, breathy and thin. In the first instance he supposes that he is making too much effort, which is true. He is told by his teacher to relax, to loosen, to make no effort whatever. If he succeeds in doing this the result is a thin tone of no volume, and one devoid of character. And if he continues using a tone of this kind, even the tones which were originally full and strong will soon become thin and weak also.

All excessive effort used in singing, except mental effort, is destructive, for it interferes with and retards the free action of the vocal organ. If the singer has to make any perceptible effort of breath or throat action to reach a certain note or a certain effect, he may be sure that his vocal organ is more or less weak, for when the vocal organ is proportionately strong in all its parts, then all tones and shades come with the utmost ease, requiring only mental effort to produce them.

The part of the vocal organ which decides the volume, beauty, compass and most of the shading and articulation, is the tongue. The tongue sets into action the entire vocal mechanism. It is the only part that can contract with perfect ease and rapidity. Its muscles are attached in front to a firm, inflexible bone, the chin, and at the other end, the rear, to the freely moving larynx and to other muscles. The tongue lies between the hard and soft palates above, and the larynx below, and works on the principle of leverage, trying to draw the palate and larynx toward each other. Now, in just the degree that the tongue possesses strength, can it awaken the force or the dormant strength in the other parts of the vocal organ, because

no muscle can exert greater power than is supplied by the resistance against which it acts and reacts.

To illustrate: lift a book from the table and notice how little force is exerted, how little your muscles contract. Then lift a chair and note how much more power your muscles exert. Next, let a friend sit on the chair and then try to lift it. Here you find a resistance that calls forth the utmost of which your muscles are capable. From this simple experiment you can learn a valuable lesson in the law of resistance. In lifting the book, you met with very little resistance, hence you exerted very little muscular power; lifting the chair called forth much more power. But it was the third experiment that really proved the power you possessed, that showed you what you were capable or incapable of doing.

The lesson is this: the vocal chords can be contracted so that they remain thin and attenuated, in which case the tone is also thin and the compass small, or they can be made thick and tense, in which case the tones will be strong and the compass large. How this is done and what mechanism Nature has provided for doing it has been shown in previous lessons.

I will again state here, however, that to give forth sound, the vocal chords must be stretched as are the strings of other instruments. Nature has made two provisions for stretching the vocal chords; one is internal. within the larynx and entirely automatic, the other is external, making use of the muscles which connect the larynx to the collar bone, the tongue and the head. The external stretching is voluntary and is due a most entirely to the activity of the tongue. When the vocal chords are permitted to remain thin, the resistance to be overcome is very little, and the power within the

larynx is usually sufficient to stretch them. But the tones, in such a case, will be thin. The tones may be sweet and pretty and sufficient in strength to meet the demands of the less ambitious, but since they lack volume they are without pathos and character, and are utterly unsuited to public performance or even to the more pretentious private singing and speaking.

But when the vocal chords enlarge in size and contract strongly, the resistance which has to be overcome in stretching them is very great, so that unusual power in the external, voluntary muscles is required. This external chord-stretching power is possessed principally by the great singers and orators. But, as one may acquire a great piano technic, so one may develop the mechanism which will produce as good a voice as the greatest singers and orators possess. Technic, whether in playing an instrument, or in using the human voice, is, in the main, strength and muscular development under control. All that is needed is to know how to develop the right muscles and then train them persistently.

So far the laws of physiology and anatomy, as they apply to the vocal organ, have been given. Also much of the laws of vocal mechanics. The physiology and anatomy of the breath-supplying organ will be given very soon.

A most important part, and one entirely new is presented to you in this lesson. It is an explanation of the "Laws of Physics and Sound" as related to the human voice.

This subject is purely theoretical. In itself, alone, it will not help you to improve your voice. The theoretical parts of the lessons were written for the purpose of explaining and proving my discovery. To do this, it has been necessary to state technical facts, to sepa-

rate and show the specific action and purpose of the **different** muscles, cartilages and bones that make up the vocal organism. In doing this, I have, as far as possible, avoided technical expressions that the student might easier understand at a reading, that which the expert and the physiologist spent a lifetime in acquiring.

To state that such and such things are so, while true, is not sufficient, for it does not prove the case. In this course of study I have proven my claims beyond contradiction. I have shown the true cause of strong and weak, of perfect and imperfect voices. I have definitely located the flaw that limits the power and beauty of the human voice. I have subjected my discovery to every law of physics, anatomy and mechanics, and have proven it mathematically correct. Furthermore, I have proven it to be infallible in practice in hundreds of student tests.

Before a defect can be remedied, we must find it. In the case of the human voice, both the defect and the remedy have been found, and now every voice may be developed to the utmost of which it is capable. These lessons reveal the defect in a way that all who read with care will recognize. While every student should read these explanations and become acquainted with his own vocal organ and its defects, I do not claim that the voice can be corrected merely by reading them. The exercises will do that.

Knowledge is power. When the student knows what must be done and how to do it, he has only to **persevere** in the doing to accomplish his greatest desires.

So much misunderstanding exists in regard to vocal resonance, that it becomes necessary to give my students a clear statement and proofs of the facts in the

Fig. 135
Mary Garden as "Prince Charming" in Cinderella

case. Without resonance there can be no good tone or voice. This has been understood all along and by every teacher, singer, speaker, as well as by all manufacturers of musical instruments everywhere. But whereas the musical instrument makers have in most cases succeeded in producing resonance by natural means, the vocalists have gone far astray. The musical instrument manufacturers recognize that the resonance depends upon the quality of the material used and the superiority of the instrument which they manufacture. The vocalists, on the contrary, look to some mysterious, mythical, exterior source for the resonance. What sins have been committed in the name of resonance! With the utmost gravity and pompous assurance, the silliest and inconceivably stupid theories have been promulgated and accepted by unthinking people.

The following statement is compiled from the (false) theories most commonly held concerning resonance:

"The resonance chambers perform the same functions as the sounding board of a piano, or the cavity of a violin. If it were not for the vibration of the air in the mouth cavity, nose cavity, and sinuses of the bones, the voice could have neither volume nor quality. The size and form of these cavities determines the tones and quality to which the air confined in them will vibrate."

Out of this theory have grown many systems which have for their aim to produce vocal resonance. These systems are called "voice placing," meaning thereby, that each tone has a certain place in the human anatomy. The low tones are supposed to be placed in the chest, the medium tones in the face or "mask," the high tones far up in the head and skull. This voice placing is also called "focusing" the voice.

Strange and weird exercises are employed to obtain resonance and to place or focus the voice. The most common among these exercises is "humming" the tone, or using the consonant "hng," or the vowels "e," "i," "oh," or "ooh."

As my method is based entirely upon facts and reason, it becomes necessary to go somewhat deeper into the study of the laws of physics as related to the voice, in order to clear up this matter of resonance. The main fact to be proven is, that the **volume and quality and resonance are the result of a perfect voice** and not, as has heretofore been assumed, that the perfect voice is the result of resonance. Or, in other words, **the perfect voice is the result of a perfect vocal organ,** which because it is complete and without fault will produce the complete and faultless voice. Good resonance cavities without a good vocal organ will never give you a good voice and the quicker you make up your mind to accept this fact, just that much quicker will you be on the road to a **Perfect Voice.**

In the old way you were taught to make a voice perfect by doing something in addition to vocal utterance, adding something to the tone **after** it was created.

In my new way, you are taught to complete the instrument so that a perfect voice will be the result automatically and instantaneously.

THE LAWS OF PHYSICS AND SOUND— CHARACTER OF SONOROUS MOTION

Extracts from Tyndall's excellent work will explain the nature of sound.

"The various nerves of the body have their origin in the brain, which is the seat of sensation. When a finger is wounded, the nerves convey to the brain in-

telligence of the injury, but if these nerves were severed no pain would be experienced no matter how serious the injury might be.

"Applying a flame to a small collodion balloon which contains a mixture of oxygen and hydrogen, the gases explode and the ear is conscious of a shock, which we name sound. How was this shock transmitted from the balloon to our organs of hearing? The process was this: When the flame touched the mixed gases in the balloon they combined chemically and their union caused the development of intense heat. This heated air expanded suddenly, violently forcing the surrounding air away on all sides. This motion of the air close to the balloon was rapidly imparted to the air a little farther off. The air at a little distance passed its motion to the air at a greater distance, thus each particle of air took up the motion of the one preceding and transmitted it to the succeeding particle of air, thus propagating a pulse of air wave."

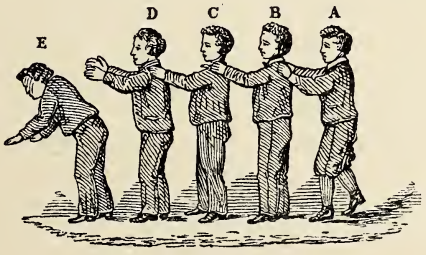


Fig. 136

The propagation of sound may be explained by a homely but useful illustration. In Figure 136 are placed five boys in a row, one behind the other, each boy's hand resting against the back of the boy in front of him. E is foremost and A finished the row. Suppose somebody suddenly pushes A, then A pushes B,

and by the resistance afforded by B, regains his upright position. B pushes C, and so on. E, having no one in front of him, is thrown forward. Had E been standing on the edge of a precipice, he would have fallen over. Had he stood in front of a window he would have broken the glass. Had he been close to a drumhead he would have struck the drum. Thus sound is sent through the air and strikes the drum of the distant ear.

INTENSITY OF SOUND

In the case of the exploding balloon the wave of sound expands on all sides, the motion produced by the explosion being thus diffused over a continually augmenting mass of air. Suppose our balloon to be a thin shell with a radius of one foot, reckoned from the center of explosion. A balloon of the same thickness, but of two feet radius, will contain eight times the quantity of matter; if its radius be three feet, it will contain twenty-seven times the quantity of matter; if four feet, it will contain sixty-four times the quantity of matter, and so on. Thus the intensity of loudness of sound increases as the quantity of matter set in motion augments.

VELOCITY OF SOUND WAVES

By sending a sound through a tube with a smooth interior surface, it may be transmitted to a great distance with very little diminution of intensity. Figure 137 represents a tin tube, fifteen feet long. At the pointed end of the tube is placed a lighted candle (C). When the hands are clapped at one end of the tube, the flame instantly ducks down at the other. It is not quite extinguished, but it is forcibly depressed. At the instant two blocks of wood (B B) are clapped together, the candle is blown out. This shows in a rough way

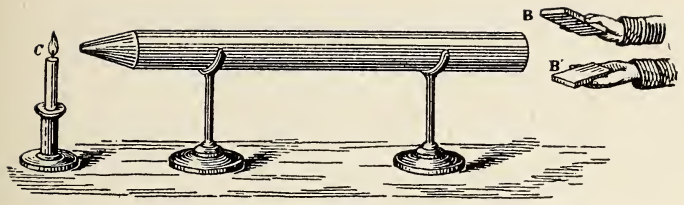


Fig. 137

the speed with which sound waves are propagated. The instant the clap is heard the flame is extinguished, though the sound had to travel fifteen feet. The time required for the sound to travel through this tube is too short for our senses to appreciate. (This also disposes of the mistaken notion that a tone can be directed at the will of the singer to the chest, the face or to the head, for the very simple reason that the tone has left the singer's throat and is beyond his control before he hears it.)

VELOCITY AND INTENSITY

In regard to sound and the medium through which it passes, four distinct things are to be borne in mind: velocity, elasticity, density and intensity.

The velocity of sound depends upon the elasticity in relation to its density. The greater the elasticity, the swifter is the propagation. The greater the density, the slower is the propagation. Thus a steel rod will propagate sound four times faster than the same rod made of lead, because lead is four times as dense as steel.

The velocity is directly proportional to the square root of the elasticity. The intensity of sound is proportional to the square root of the sounding material.

By **velocity** of sound is meant the speed or rate of motion in which sound travels.

By **elasticity** is meant, for instance: When an external force produces alterations in the form of a solid body, and if, when this force ceases to act, the solid body instantly resumes its previous form. In the proportion that such a body resumes its natural form quickly or slowly, its elasticity is extreme or not. The propagation of waves of sound through solid bodies depends upon their elasticity. An elastic body will transmit sound faster than a non-elastic body.

Density, when of two bodies of equal volume, one of them contains more matter (is heavier) than the other, it is said to have greater density. For instance: A board of a certain shape and size made of pine wood is of much less density than a board of the same shape and size but made of oak. For this reason a sound coming through a pine board is soft and mellow, while the sound from oak would be sharp and hard.

The square root of a number is that number which when used twice as a factor, produces the number; thus two is the square root of four, since two times two equals four. Also the square root of nine is three, because three times three are nine, etc.

Intensity means the louder, more energetic or vigorous sound as compared with the soft and mellow sound. The sound of steel is more intense than the sound which comes from wood, and the sound of a violin string or of a vocal muscle is more mellow than that from wood, etc.

EXERCISES TO LESSON XXIII

As a preliminary to this lesson, try the following experiment:

(1) Get a straight stick of wood and call it the beam of a balance scale. Balance this beam on your

table, by placing the center of it upon a cork or some other elevation in such a way that the beam lies exactly parallel with the table. Or tie a string in the center of the beam and hold it in your hand. The straight beam is to represent the larynx, when all the muscles which are attached to it operate in equal proportion. In this case there is no shifting, no wavering of the beam or scale.

(2) Let the left side of the beam represent the point at which the throat muscles are attached. Now hang or place a small weight on that side to see that the scale tips that way. Why? Because there is no balance weight on the other side. So in voice, when the throat muscles alone are active, the larynx is pulled downward. This downward pull of the larynx leaves the vocal chords loose and they are less tense, softer and thicker. Because of this, the tones become strong, but rough and coarse. Very low tones can be obtained by this action, even by ordinary high voices, but the voice is throaty. The advice to "open the throat" so often given to voice students, has as a consequence, exactly this action. Try to open the throat, yawn or merely think of yawning and the throat muscles will at once lower the larynx. It is true the voice becomes at once lower and heavier. What it gains in depth is lost in the higher tones. What it gains in volume is also lost in quality!

(3) Let the right side of the beam represent the soft palate; that is, suppose the muscles from the palate and the head are attached to the right side of the scale near the end. But now instead of placing a **weight** on that side, pull it **upward.**

The throat muscles pull the larynx down, the palate muscles pull the larynx up. The upward pull of the palate muscles is much lighter than the downward

pull of the throat muscles. In consequence of this, the vocal chords do not become thicker and looser as is the case when the throat muscles alone are active, but on the contrary, they shrink and become thinner, only a portion of them is vocalized, hence the voice becomes thin, but also high. To get a high voice quickly, all you need to do is to raise the larynx.

When teachers advise directing the voice to the palate or to the head, this is what happens. Directing the voice upward prompts the palate and head muscles to contraction; the throat muscles relax and are elongated; they do not resist the upward pull against the larynx. This action, as was said, raises the voice, but it makes it thin and light, too light for public singing. Most amateur female voices are made this way, and it must be conceded that the voice is often very sweet and attractive, but sadly lacks the full, rich volume of tone so greatly desired.

For a few years such voices often reap considerable success even in public, in light opera and church, especially so if the singer is very attractive. But the constant strain upon such a voice quickly ruins it, and this accounts for the fact that so many singers disappear from public view after a few years.

(4) Now place an equal weight upon each end of the beam of scale. Notice now that there is no downward tipping or upward raising of the ends; but as you can easily feel by testing it, the middle of the beam is held firmly.

In the voice, the balance is held by the hyo-glossi muscles, because they add their strength to the upward-pulling palate and head muscles. In addition they tilt the front part of the hyoid bone downward, thus counteracting the upward pull of the thyroid

cartilage. Lastly they give to the tongue that support which is needed for all vocal muscles, and finally through this action, the tongue, the palate and all other legitimate vocal muscles, become firm and tense, so that their vibrations can be added to the volume and quality of the voice.

Fig. 138

Throat Muscles pulling Larynx down. Low voice, but rough.

Correct Action. High and Low Voice, Strong. Highest Type of Quality.

Palate Muscles pulling Larynx upward. High voice, but thin.

You are now somewhat familiar, I trust, with the action of contracting the hyo-glossi muscle against the resistance of the thumb or the tongue support.

It is so very easy to do the wrong thing, at least the temptation to do **more** than is absolutely necessary is very great indeed. Usually the student thinks that by a greater exertion he will gain strength more quickly. He points to an athlete, who adds to his strength by **vigorous** practice of lifting or punching.

The voice student must remember that this does **not** apply to him at all. When the hyo-glossi muscle contracts, it raises merely the hyoid bone and nothing else. What you notice as a great pressure of the tongue, is merely a contraction upward. Many think that they can increase this contraction by sheer force. In this they are greatly mistaken. Nothing whatever can be done except to let the tongue fall of its own

weight upon the underlying thumb or tongue support. That is all that you should do; all that you possibly can do, to be absolutely right. **Remember this for all time!**

The tests already given of holding the larynx quiet, while making the groove and the same with the palate, are absolute proof of a correct action.

Some students, however, and especially those with a naturally strong action of the hyo-glossi muscles, and among these must be counted the stammerer and stutterer, persistently thicken and stiffen the tongue tip, even in the silent practice.

Against this fault, make the following tests:

(1) Place the thumb far back under the tongue, then take hold of the tip of the tongue, about one inch or a l'ttle more, with handkerchief between two fingers of the other hand. See to it that the tip of the tongue remains loose while you draw the tongue slightly backward. Hold the tip of the tongue firmly between the fingers, but as the tongue is drawn backward, let the fingers follow; that is, it will seem as if you are drawing the fingers inside of the mouth. Notice that in this effort, you feel a pretty strong pressure of the tongue upon the underlying thumb.

(2) Again place the thumb under the tongue far back, as far as the last back teeth. Also hold the tip of the tongue now very firmly between the two fingers of the other hand, wrapped of course, with a handkerchief. Having gained this position, now try to pull the tongue outward, forward beyond the teeth. But, and this is very important, do not let the tongue be drawn out. By a conscious effort of your will, draw the rear part of the tongue as strongly backward as you draw the front part of the tongue forward with

the fingers, thus neutralizing the two efforts. Notice that now again the tongue is pressing strongly down upon the underlying thumb, while the front part of the tongue remains loose.

In this wise you will localize the exact hyo-glossi effort, which is always in the rear part of the tongue; **never in the front.**

(3) Still keeping the thumb under the tongue and the front of it held between the fingers, but not so firmly now, speak or sing "ah, a, ee, oh, ooh," and "kah, kay, kee, koh, kooh," as best you can. The sound may not be good; that does not matter, merely localize the effort. Notice that at every sound you feel a pressure upon the thumb, while—and that is important—the tip of the tongue is loose, at least it should not become hard. Notice also that when you make a pause between the sounds, there is no longer a pressure; that the tongue then is quiet and altogether loose.

Singers may sing up to "F" on the fifth line and down as far as their **natural** voice will allow. The voice will be strong, but perhaps not good, because the tongue is being held with the fingers and the thumb underneath also disturbs the free tone.

(4) Every now and then alternate your tests. First determine whether the tongue tip remains loose while you speak or sing; then withdraw the fingers from the tongue tip to determine whether the larynx moves or not. If the larynx does not move and the tip of the tongue remains loose while you speak or sing, you have localized the vocal effort **absolutely** and correctly.

On the contrary, if the larynx moves (a little trembling, slight motion does not matter) quite a great deal, or if the tongue tip becomes hard or stiff,

then you have not localized the vocal effort correctly. You still speak or sing wrongly and you will require considerable practice on these exercises.

You are most likely making too strong an effort, thereby holding some parts stiff, so that they cannot operate.

Review the lessons on isolating the hyo-glossi muscle and keep at it until you get it.

If you can but learn to relax the tongue, to merely let it drop upon the thumb, you have gained very much. Without this control, no real success can be hoped for, therefore do all you can to gain this.

(5) Now, in your daily practice of the groove against the thumb or underlying tongue support, make sure also that the effort is made way back in the tongue; that the tip is loose and that the larynx is quiet.

This exercise should be as easy and free as bending your fingers inward and outward after you once get it mastered. See that you realize **two** actions; one, a contraction, the other a relaxation. The first is making a groove, the second is letting the tongue go upward again. Two motions, one downward and one upward, is all there is to it.

EXAMINATION QUESTIONS ON LESSON XXIII

1. Is it possible to have a perfect voice as long as the vocal organ is imperfect?

2. What part of the vocal organ decides the volume and beauty of the voice?

3. Are you satisfied to continue the strengthening of the hyo-glossi muscle until the vocal organ is perfect?

4. What is meant by resonance?

5. What happens to the voice when the larynx is pulled downward?

6. What happens to the voice when the larynx is drawn upward?

7. Do you now fully understand and realize that the hyo-glossi or tongue muscles cannot be forced?

8. How should you practice the groove?

9. Do you now realize the exact vocal attack, or rather, the tongue beat, which is the same?

10. Can you now isolate the tongue with ease and at all times?

LESSON XXIV

THE LAWS OF PHYSICS AND SOUND

(Continued)

MUSICAL SOUNDS

If human eyesight were sharp enough to see the vibrations and alterations set up in the air through which a voice was passing, we might make some wonderful additions to our knowledge. (In ordinary conversation, the physical both precedes and arouses the psychical (emotion); spoken language, which gives us pleasure or pain, rouses us to anger or soothes us to peace, exists for a time between us and the speaker as a purely mechanical condition.)

Noise affects us as an irregular succession of shocks. We are conscious of a jolting and jarring of the auditory nerves, whereas a musical sound flows smoothly and regularly. How is this smoothness secured? By rendering the impulses received by the tympanic membrane perfectly periodic. The motions of a common pendulum, for example, are periodic, but they are far too sluggish to excite sonorous waves. To produce a musical tone we must have a body which vibrates with the unerring regularity of the pendulum, but which can impart much sharper and quicker shocks to the air. The only condition necessary to the production of a musical sound is that pulses should succeed each other in the same interval of time. If a watch, for example, could be caused to tick with sufficient rapidity, the ticks would blend to a musical tone; and if the strokes of a pigeon's wings could be greatly accelerated, the progress of the bird through the air would be accompanied by music. The humming bird actually attains the necessary rapidity. If the puffs of a locomotive could be increased to fifty or sixty a second, the ap-

proach of the engine would be heralded by an organ peal of tremendous power.

The production of a musical sound can be illustrated by causing the teeth of a rotating wheel to strike in quick succession against a card. Figure 139.

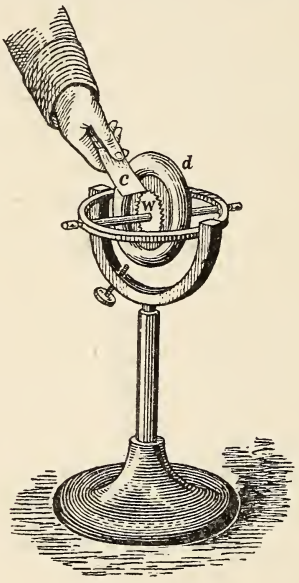


Fig. 139

The above gyroscope consists mainly of a heavy brass ring (D), along with which rotates a small-toothed wheel (W). On touching this wheel with the edge of a card (C), and rotating the brass ring, a musical sound is produced. By increasing the rotary motion the tone becomes higher; by reducing the motion the tone becomes deeper. This proves the important fact that the pitch of a note depends upon the rapidity of its pulses or vibrations.

DEFINITION OF PITCH

If two notes coming from two distinct sources are of the same pitch, their rates of vibrations are the

same. If the tuning fork yields the same note as an organ pipe or the tongue of a concertina, it is because the vibrations of the fork in one case are executed in precisely the same time as the vibrations of the column of air in the organ pipe, or of the tongue in the concertina. The same holds good for the human voice. If a violin string and a voice yield the same note, it is because the vocal chords of the singer vibrate in the same time as the string vibrates.

The pitch of a musical note depends solely upon the number of vibrations concerned in its production. The more rapid the vibrations, the higher the pitch. To enable a musical string to vibrate, it must be stretched between two rigid points. Figure 140 is an instrument employed to stretch strings and to render their vibrations audible.

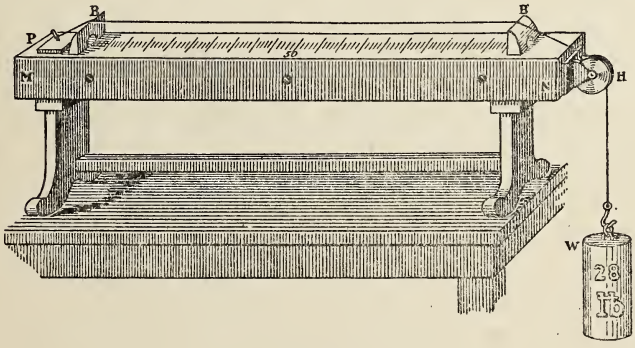


Fig. 140

From the pin (P), to which one end of the string is firmly attached, it passes across the bridges (B and B), being afterward carried over the wheel (H). The string is firmly stretched by a weight (W), of twenty-eight pounds, attached to its extremity. The bridges (B and B), which constitute the real ends of the strings, are fastened to the long wooden box (M N). The whole instrument is called a monochord or sonometer.

Plucking the stretched string at its middle, you hear a sound, but the sonorous waves which strike the ear do not proceed directly from the string. The amount of wave motion generated by so thin a body as the string is too small to be noticeable at any distance. But the string is tightly drawn over the two bridges, and when it is made to vibrate, its tremors are communicated through these bridges to the entire box. And the box, after intensifying the vibrations, transmits them to the surrounding air, thereby setting it into motion.

LAWS OF VIBRATING STRINGS

Having learned how the vibrations of strings are rendered available in music, we must next investigate the laws of such vibrations. Plucking the string of Figure 140, the sound heard is the lowest of fundamental note of the string, to produce which it swings as a whole, to and fro. By placing a movable bridge under the exact middle of the string and pressing the string against the bridge, the string is divided into two equal parts. Plucking either of those two divisions, a note is obtained which is exactly an octave above the fundamental note. In all cases, and with all instruments of whatever kind, the octave of a note is produced by doubling the number of vibrations. One-half of this string vibrates with twice the rapidity of the whole string. In the same way one-third of the string vibrates with three times the rapidity, producing a note one-fifth above the octave; while one-fourth of the string vibrates with four times the rapidity, producing the double octave of the whole string. In general terms, the number of vibrations is inversely proportional to the length of the string; the smaller the divisions of the string, the higher the tone. Again, the more tightly a string is stretched, the more rapid are its vibrations. By plucking the string with

one hand, while the other hand alternately lifts and presses upon the weight, the quick variations of the tension will produce a varying, wailing tone. An octave consists of the eight tones of the scale; thus C to C on the piano is an octave.

By applying different weights to the end of the string and determining in each note the number of vibrations executed in a second, we find the numbers thus obtained to be proportional to the square root of the tension. A string, for example, stretched by a weight of two pounds, executes a certain number of vibrations a second. If we wish to double the number of the vibrations, we must stretch the string by a weight of four pounds; if we wish to treble the vibrations we must apply the weight of sixteen pounds, and so on.

The vibrations of a string also depend upon its thickness. If, for instance, of two strings of the same material, equally long and equally stretched, one has twice the diameter of the other, the thinner string will execute double the number of vibrations of the other in the same time. If one string be three times as thick as the other, it will execute only one-third the number of vibrations, and so on.

Finally the vibrations of a string depend upon the density of the matter of which it is composed. If the density of one string be one-fourth of that of another of the same length, thickness and tension, it will execute its vibrations twice as rapidly; if the density be one-ninth that of the other, it will vibrate with three times the rapidity, and so on. Therefore, the number of vibrations is inversely proportional to the square root of the density of the string.

In the violin and other stringed instruments we avail ourselves of thickness instead of length to obtain

deep tones. The human voice is a mechanical instrument only in so far as the different parts constituting it must be in exact uniformity to produce equal results with mechanical instruments. Also, it is subject to the same laws in regard to velocity (number of vibrations), elasticity, density and intensity. That is, the same number of vibrations per second produce the same pitch either in a mechanical instrument or in the human voice. The elasticity of the vocal organ is another necessary adjunct, for if this organ were in a tight, stiff state, it could not vibrate freely.

In the same way there must be a certain density of the vocal chords, otherwise the tone would be devoid of intensity; it would be too faint and thin to produce tones of character and substance. But the vocal instrument is in all other respects unlike the mechanical instrument, because the vocal instrument is subjected to our will and directed by our intelligence, enabling it to be trained to the highest perfection. For instance, many musical instruments require provision for each separate tone and the means of changing the character, intensity, tone color, etc., are small, but in the vocal organ such changes are so manifold that the same note can be produced with constant variations, creating ever new results. In the piano, for instance, you have a separate key for each tone, and after the key is struck you cannot change or modify the tone.

OVERTONES—TONE QUALITY

It has been shown that a stretched string can either vibrate as a whole or divided into a number of equal parts, each of which vibrates as an independent string. Now, it is not possible to vibrate one section of the string without at the same time affecting, to a greater or less extent, its subdivision; that is to say, added to

the vibrations of the one section we have always, in a greater or less degree, the vibrations of its aliquot parts.

In the experiment with the monochord, when the wire was to be shortened, a movable bridge was employed, against which the wire was pressed so as to deprive the point resting on the bridge of all possibility of motion. This strong pressure, however, is not necessary. If we press the feather end of a goose quill lightly against the middle of a string, and draw a violin bow over one of its halves, the string yields the octave above the note yielded by the whole string. Figure 141. The mere damping of the string at the center by the light touch of the feather is sufficient to cause the string to be divided into two vibrating segments. Nor is it necessary to hold the feather there throughout the experiment; after having drawn the bow, the feather may be removed; the string will continue to vibrate, emitting the same note as before.

To prove that when the center is damped and the bow drawn across one of the halves of the string, the other half also vibrates, place across the middle of the untouched half a rider of paper. Damping the center and drawing the bow, the string shivers and the rider is overthrown. See Figure 141.

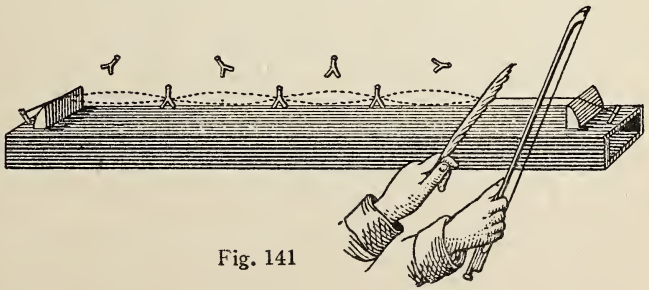


Fig. 141

When the string is damped at a point which cuts off one-third of its length, and the bow drawn across the shorter section, not only is the shorter section thereby

thrown into vibration, but the longer section divides itself into two ventral segments with a node between them.

Damping the string at the end of one-fourth of its length, if the bow is drawn across the shorter section, the remaining three-fourths divide themselves into three ventral segments with two nodes between them. Damping the string at the end of one-fifth of its length, the remaining four-fifths divide into four ventral segments, with three nodes, and so on.

The higher notes produced by these subdivisions are called the harmonics of the string. And so it is with other sounding bodies. We have in all cases a coexistence of vibrations, that is, the higher tones mingle with the fundamental lower one, and it is their intermixture which determines what we term the quality of the sound. It is this union of high and low tones which enables us to distinguish one musical instrument from another.

A clarionet and violin, for example, though tuned to the same fundamental note, are not confounded; the auxiliary tones of the one are different from those of the other, and these latter tones, uniting themselves to the fundamental tones of each of the two instruments, differentiate the identity of the sounds. All bodies and instruments employed for producing musical sounds emit, besides their fundamental tones, others due to higher rates of vibration. Such sounds are known under the general term of **"overtones"** or aliquot tones. These combinations constitute resonance.

Color depends upon rapidity of vibration, blue light bearing to red the same relation that a high tone does to a low tone. A simple tone, then, may be defined as the product of a vibration which cannot be decomposed into more simple ones. An assemblage of tones, such as

we obtain when the fundamental tones and the overtones sound together, determines tone quality.

To the voice student the question of tone quality is the all-important one; upon it depends the success or failure as a singer, for no matter how much technic he may acquire, or however pleasing his personality may be, if his voice is deficient in quality his success will be meager. Even in a purely technical sense, he will fail

Fig. 142
Frieda Hempel and Enrico Caruso in Les Pecheurs de Perles.

to meet the demands of higher artistic interpretation because his voice will fail him at the moment of climax. He has given all he has long before the apotheosis of ecstasy in the song is reached. The spirit may be willing, but the flesh—the vocal organ—is weak, too weak for the demands made upon it.

On the other hand, if the vocal organ is fully developed, then the quality of the singer's tone will arouse enthusiasm, even with the simplest song. As I write this I have in mind one of my students whose voice is a marvel of beauty; his compass now reaches from A below the staff to F above high C, each tone as full and distinct as if chiseled. He was offered a very large sum of money and a pension to his family, merely to lead the chorus, himself to stand unseen behind the scenes, for unfortunately, he is a hunchback. Such is the wonderful value of a real voice.

EXERCISES TO LESSON XXIV

Public speakers and singers require a big, far-carrying tone, and also the ability to continue speaking or singing for hours without the voice becoming tired. Power and endurance of tone co-exist. If the tone is strong without force being used, the endurance is there also. The tone must, of course, be natural and flow easily, and this can only be the case when the vocal chord-stretching, tone-producing tongue muscles possess great power and elasticity.

You must always keep in mind the fact that **you** control the tongue and that **it** controls all sound. Of course, you can force the vocal chords and larynx to some extent, through the throat or palate muscles, and you can even stretch the vocal chords with the chin and masticatory muscles. But a natural, full, beautiful voice could never be secured by either of these methods.

They are unnatural, and an unnatural way of speaking or singing leaves the vocal organs either too much relaxed or too hard. Where either of these conditions exist, continuous singing or speaking becomes impossible. When, however, the hyoid muscle is made strong and is taught to contract correctly, the slightest voluntary motion of the tongue will be sufficient to stretch the vocal chords and cause all the other muscles connected with the larynx to work easily and smoothly and at the right time. When this latter condition exists, speaking and singing may be prolonged for hours without tiring the voice.

Of all the muscles connected with the vocal organ, the tongue muscle alone is free; that is, it is not attached to a firm bone as the other muscles are, and it is because of this fact that we are able to control it and train it to a high degree. To what a wonderful degree the human muscles can be trained by continuous exercise is demonstrated in the case of athletes, professional dancers, etc. In the musical realm we observe this development principally in the enormous technic of the piano virtuoso. This piano technic is based mainly upon the great strength of the finger and arm muscles. It is said that Paderewski once struck a hole through a thick glass window in a New York hotel with the force exerted by one finger and that the hole was as round as if it had been cut by a bullet. This strength was not gained in a month or a year, but by persistent exercise. I mention these facts that you may not get the false impression that you can by a few weeks' practice accomplish wonders. To be sure, it frequently happens that in a short time remarkable results are obtained, but that is only where the muscle possesses much natural strength to begin with. In such cases the exercises produce rapid and often astonishing progress.

The great majority of people, however, are not so fortunately constituted, and to them success comes as the reward of patience and perseverance. Where the hyoid muscle is undersized and weak it must be made to grow and acquire strength, and in the matter of muscular growth, Nature often works slowly, but always surely. Hence no one can fail to acquire a good voice if he perseveres with these exercises. They will do what all other methods have failed to do—that is, produce permanent, dependable strength and beauty of tone.

THE BREATH CANNOT STRETCH THE VOCAL CHORDS

In spite of the fact that in these instructions much has been written about the breath, and that very important breathing exercises have been given, it must be understood that breathing exercises, however excellent they may be, can never produce a big, flowing tone. A good singer should have a compass of two octaves (25 tones) that he completely controls, so that he can bring out every nuance with ease. If it were only the breath that produced these twenty-five tones from the vocal chords, then for each individual tone we would require a separate breath pressure, a thing that would be quite impossible.

As we know, the pitch of the tone depends upon the number of vibrations of the vocal chords. If they vibrate 256 times a second they produce the sound of the "C" which is placed under the first line in the musical note system. Every succeeding tone possesses an increased number of vibrations. The next "C" possesses 512 and high "C" numbers 1,024 vibrations. Every deviation from the fixed number of vibrations either sharpens or lowers the tone and makes it out of tune.

Working upon the theory that the breath controls the tone, we find that if the singer wished to increase or decrease the volume of the same pitch, the breath pressure would have to be changed. But, as every change of the breath is supposed to alter the vibrations as well as stretch the chords, the desired tone could not be retained because it would have to sink or rise with the change of the breath. It is, therefore, clear that the breath has nothing whatever to do with the pitch of the tone; it can only set the vocal chords in motion and keep them vibrating, and no more.

BREATH ATTACK AND POWER

Even though the breath cannot stretch the vocal chords, it is still of great importance, particularly in the training of the voice. The principal things to be avoided in breathing are physical effort and every kind of strain, for if the chest or diaphragm is purposely stiffened, the larynx and its controlling muscles also become stiff and hard.

It is generally believed that the contraction of the big, strong muscles of the chest, stomach and diaphragm should be strongly felt, and therefore many teachers recommend a forced contraction of these muscles. A little consideration will, however, show that we feel these powerful muscles least because they are naturally strong, so strong that they do their work automatically without strain. It is only when a muscle is being strained that we feel it or are aware of its existence. The leg or hip muscles do not have to be strained and forced in order to have them discharge their duties of carrying the body in walking. No, they do their work without apparent effort. If an effort is necessary then there is something wrong. This is equally true in the case of the breathing muscles.

THE BREATHING MUSCLES DO NOT REQUIRE STRENGTHENING

Consider the extraordinary power exhibited by these muscles in cases of cramps, whooping cough, etc. Even the highest and most powerful tones of a heroic tenor would employ only a small part of this great muscular strength. Therefore, the singer or speaker does not need to strengthen his breathing muscles, but must learn to release them. Instead of straining against an imaginary resistance, he should so control his breathing muscles that they will instantly, and without the slightest exertion, automatically contract. To do their work correctly they should retain their elasticity, but create no noticeable feeling of contraction.

THE MUSCLE PRINCIPLE

The principle to be observed with regard to all muscular motion, including the breathing and tongue muscles, and, by the singer, the palate and throat muscles, also is as follows:

Teach your brain to understand that there is no obstacle to the free contraction of the muscles in question; that in the act of breathing, the stomach muscles have nothing to resist; that there is no stiff mass of breath in the chest and stomach against which you should instinctively strive. On the contrary, you should think of the stomach and chest as a hollow space and of the muscles as contracting over this space easily and with a feeling of unrestricted freedom. Also imagine that this contraction draws the stomach and chest somewhat nearer together. Of course, no actual motion takes place, as the muscles simply change from an inactive or loose to an active or contracted condition.

First Exercise: Cough a few times, then cease suddenly, and you will observe a large but loose forward

movement of the stomach. Cough again and observe that, without wishing or intending this result, the diaphragm contracts slightly. Now draw the lower part of the stomach in loosely, but deeply, and you will find that the entire stomach goes with it. Next, simply **think** of doing this and observe this time that the lower chest also draws in slightly, although you did not intend to make it do so. You will see from this that the chest motion results from the stomach motion.

In doing this exercise, sit comfortably, leaning lightly against the back of the chair. Now pause a few seconds between each exercise and picture the stomach as a hollow space, against which the muscles suddenly, but quite softly, contract. Then shape the mouth and tongue for a soft "s" and repeat the stomach exercise and observe that the "s" is involuntarily heard in a low, soft hiss. This is a proof that your stomach muscles are working correctly. The deeper and more loosely you can move the stomach, the softer will the "s" sound be. Observe, also, in this exercise that the chest feels hollow and relaxed. You must learn to make these motions a little faster each day. Devote about two minutes to the exercise and, if convenient, repeat several times a day.

THE DIAPHRAGM

Second Exercise: Hold your hand against your stomach and make the "s" sound suddenly but softly, without the least stomach motion. In fact, do not even think of the stomach. If you hold the upper part of the body quite relaxed and prolong the sound, you will experience a sinking sensation in the under portion of the chest, right over the stomach (diaphragm) as though it were caving in. Again hold the upper part of the body quite relaxed and make a prolonged low,

soft, breathy "s" and observe that the body collapses much as it would if you sank into a chair in extreme weariness. In this exercise the stomach muscles were excluded as much as possible and the chest and diaphragm were isolated.

STOMACH MUSCLES AND DIAPHRAGM

Third Exercise: Move the stomach twice suddenly, but loosely, backward, as in the first exercise. If this exercise is done correctly, only a soft "s" will result. Now, as in the second exercise, aspirate the "s" without the stomach motion and with the upper body quite relaxed. Next, unite the stomach and diaphragm exercise by suddenly and loosely drawing in the stomach and at the same instant expect the feeling of sinking or falling in the lower chest. Hold the position of the mouth as before and notice that you now have a sharp, hissing "h'ss." This is a proof that the breathing muscles have contracted powerfully and without the least strain. Later, when the exercise can be performed with ease, instead of the "h'ss" call out "he, ha, ho." Later still, read or speak aloud short sentences and observe that the stomach and chest seem loose, that the breath flows easily and suffices for long sentences. These exercises must be practiced until the muscular action becomes automatic. This method of breathing should be used for both singing and speaking. Be sure that you have the tongue beat for the tone attack and a slight beat near the stomach for the breath attack.

After a little while the breath attack need no longer be practiced, because it becomes automatic. The tongue attack, however, must be watched **continuously,** as all vocal success finally depends upon it.

EXAMINATION QUESTIONS ON LESSON XXIV

1. What is noise?
2. What is a musical sound?
3. What is pitch?
4. What is the mechanical cause of a thin tone?
5. What is the mechanical cause of a strong tone?
6. What is the mechanical cause of tone quality?
7. What is the mechanical cause of overtones?
8. What is the principal thing to be observed in the breathing muscles?
9. Can the breath stretch the vocal chords?
10. If the breath could stretch the vocal chords, how many different kinds of breath would the singer need?

LESSON XXV

LAWS OF PHYSICS AND SOUND—(*Concluded*)

The use of the tone "A" to tune musical instruments can be traced back to the ancient Egyptians and Greeks, whose priests, with a definite effect in view in their long recitatives, declamations and chants, selected the tone "A" as the most appropriate tone of the male voice in the worship of Apollo, the God of Music. This "A" is in the second space of the musical staff—440 vibrations per second. It is the easiest tone for the human voice to sing.

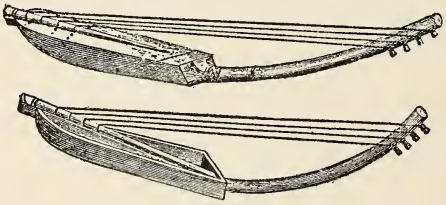
APOLLO.

Fig. 143

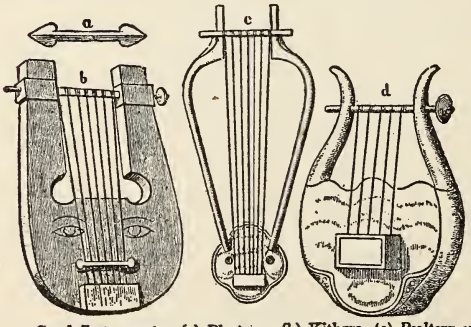
The Lyra was an instrument of four strings with a compass of two tones and a semi-tone, usually, E, F, G, A; the A was the leading or Pitch tone of the Lyra which was tuned to the A of the voice and was used very sparingly as an accompaniment to the singers.

Both sacred and secular Lyras were restricted by law to the sacred number of four strings only. Such tunes as the first strain of "America," "Home, Sweet Home," "Yankee Doodle," etc., in a simplified manner can be played on secular Lyras of four strings. But Lyras were used mostly to accompany the voice. A pluck of one or two strings—chords of two tones only—were used as an accompaniment to the singers.

The octave which we use, and which includes C, was not in general use until long after the Christian era. For centuries the Lyra was the only musical instrument tolerated in worship of the Gods of Greece and was even then looked upon with suspicion and derision as being the profane work of man, the tuning of which was a mechanical affair liable to divert the minds of the worshipers away from the mysticism of the temples and not to be tolerated.



The earliest Egyptian Harp.



Greek Instruments. (a) Plectrum, (b) Kithara, (c) Psaltery or long lyre, (d) Chelys, a small lyre.

Fig. 144

All sounds that come to us through the air, whether the rattling of a railroad train, the humming of an electric wire, the song of a bird, the laugh of a child, or the tones of a musical instrument, owe their great diversity in pitch to an immutable law which fixes the pitch of all sounds by the number of waves or vibrations they produce in the air.

In conformity with this fundamental law, based on Nature itself, it has been ascertained that any object vibrating 440 times a second at a temperature of 68 degrees Fahrenheit, must give forth a certain tone, and that tone is always the same. We call it in International Pitch the note "A" of the musical staff.

If it were possible for a person to strike his knee 440 times a second with his hand it would have to produce the International Pitch "A."

Some musical instruments are deficient in partials or overtones. For example, the clarionet has only two partials and so has the flute. But when the two instruments play together, they complete each other. What one lacks in partials the other makes up. Each alone produces but an incomplete tone; together they produce a most beautiful blend of fundamental and partials or overtones.

Just as pure white light is a compound of all the tints or colors of the rainbow, so is a pure musical tone a compound of tones of different rates of vibrations, which means tones of different pitch.

The flute, for instance, has only two overtones; it is mainly this fact that renders the flute uninteresting as a solo instrument. A long solo on the flute becomes stale and monotonous, while a violin, with its many overtones, is attractive to the ear. Its tones are more appealing by reason of their variety of tone-color. A

really first-class violin, if played by a great artist, affects us almost as much as the human voice.

The more overtones there are within a tone, the finer is the tone. Therefore, to reach the type of greatest vocal beauty, we must cultivate all that will develop the overtones in the voice.

Now in order that the overtones may be free and strong, the **initial, fundamental tone must be strong.** This is the key to a beautiful voice; never forget that!

Upon the power or strength of the fundamental tone depends the quality of the voice.

AN EXPERIMENT

With this lesson you are receiving our "Harmonic Resonator," especially made for the Perfect Voice Institute, with a guaranteed vibration of 440 per second to the tone of "A" in the second space of the musical staff. This instrument is manufactured especially to illustrate and prove to you a very important point in vocal physics.

It will prove to you first, that a given quantity and quality of vibrating material will produce a corresponding quantity and quality of sound.

Secondly, that if by any means you add to the surface or diameter of this vibrating material you thereby increase the volume of sound and the quality of the tone.

Thirdly, it proves that the finer quality of the sound or tone is due directly to the larger volume or greater strength of tone, caused by the enlarged vibrating material added to the original quantity.

The "Harmonic Resonator" consists of a wooden box divided into resonance chambers, a metal tube

and a metal tuning plate tuned to "A," 440 vibrations per second. A mallet goes with the resonator.

Strike the tuning plate several times in quick succession with the mallet and notice the large, beautiful sound.

Then place a card upon the box, thus covering the opening under the tuning plate, again strike the tuning plate and now notice, that the tone is greatly altered — it is thin and without volume and real beauty.

Leave the card upon the box, again strike the tuning plate several times in quick succession and then withdraw the card. Notice now that the tone is again large and beautiful when you withdraw the card. Insert the card, and withdraw it; notice the change of tone without the card; and with it.

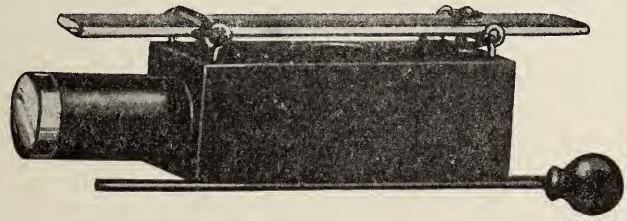


Fig. 145

Harmonic Resonator.

When the card covers the opening of the box, it dampens the entire resonance part, that is, all of the parts except the tuning plate are, through the card, prevented from vibrating together with the tuning plate.

The box and the tube projecting out of it very greatly enlarge the vibrating material; all these parts vibrate together with the tuning plate, and thus greatly enlarge the volume of tone. Because the volume of tone is so much greater now, the overtones or aliquot tones have become much stronger, and therefore the sound is much more beautiful than before.

This law can be compared to a spiral spring: the first ring would illustrate the tuning plate alone, the second and all subsequent rings would illustrate the addition of the second, third, etc., chamber and tube.

The reverse is also true; if you listen very closely to the sound from the resonator, you will find that it gradually becomes less in volume and thinner till it is lost in a faint echo; because the different chambers gradually cease to vibrate, the volume becomes smaller.

The great lesson to the vocalist is this:

The vocal chords are like the tuning plate. They originate the sound, but to make the sound strong and beautiful many other things must take place. All the muscles which stretch the vocal chords, indeed every part of the larynx, must be in such a firm, taut condition, that, like wood, metal or bone, they will vibrate at the same rate as the vocal chords. Now since the parts surrounding the vocal chords and the muscles which stretch them, namely, the tongue, the palate, etc., constitute a very large mass of vibrating material, the sound will naturally be many, many times larger than the vocal chords by themselves could produce. But if these parts were left relaxed, they would be too loose to vibrate.

It is not the air within your chest or within your mouth, nor the hollow spaces of the larynx, nose and head, that originate vibrations, but your own sinews, the taut muscles and bones surrounding and constituting the vocal organ.

If you could expose the muscles of your arm and stretch them sufficiently taut, you could play upon them as a violinist does upon the taut strings of the violin, which were originally nothing but sinews and parts of some animal.

When a boy goes whistling down the street, he does so **not** with the breath, but with the tautly held lips. The breath is merely the part that sets the lips to vibrating, just as you made the tuning plate to sound by striking it. The breath is the impelling force, but **not** the sound-producing mechanism. Just so steam is the impelling force, but not the motion-producing mechanism that pulls the train.

The theory that the cavities in the throat, nose or head are resonance chambers is utterly wrong and absurd. **Not** the cavities, but the **bones** and **muscles** which form the cavities, vibrate and thus enlarge the voice.

The idea that the cavities of the head are resonance chambers is entirely a modern invention or, rather, superstition. The old masters attributed a bad voice to some of the following causes: Impure blood surrounding the vocal organ, imperfections in the vocal organ, improper functions of the body, forcing of the voice, stiff jaws, hard vocal chords, singing through the nose and singing through the teeth.

Perhaps the foremost of all the old Italian masters, Giov. Camillo Maffei da Solofra, in his letters on voice, written in 1562, expressly warned against directing the voice or the breath along the soft palate. He says these are two very great faults. He found by experience that any artificial means of directing the voice results finally in the loss of voice, yet these very faults have been adopted by many modern teachers because of the misleading idea that resonance is something that can be added to the voice.

It is true that the singer feels strong sensations in the face, near the nose and in the head. These sensations are caused by the different muscles which are attached to the bones and, as is always the case in good

singers or speakers, they have become firm in their effort to stretch the vocal chords, therefore these muscles also vibrate and of course this vibration is felt at their place of attachment.

Not knowing the true causes, many teachers jumped to the conclusion that the cavities acted as a sounding board to the voice.

By thinking over the experiments already made, you can easily see the mistake of such an assumption. To increase the sound of the tuning plate, the plate has to be brought into direct connection with the sounding board and metal tube. If you take the plate away from the tube, the sound cannot be increased in the least. Now the bones of the head are too far from the vocal chords to act as a sounding board. But the muscles which control the larynx are really a part of the vocal organ; they surround the vocal chords in every direction and, as they are tied to the bones, both the muscles and the bones vibrate together with the vocal chords and thereby magnify the tone many times.

Sound travels at the rate of about 1,100 feet per second, or about $^1/_5$ of a mile while you count "one." The sound has left your mouth before you hear it. How, then, could anyone direct the sound **after** it is made? It certainly cannot be directed **before** it is made, no more than you can attract lightning when there is no storm.

Of course the vocal organ can be influenced. Its position can be changed **before** the sound, but as we have seen from the lessons on vocal physiology, any change, any variation of the natural position of the vocal organ, is a change for the worse. Now, if anyone tries to direct sound or breath in any special direction, for instance, against the upper palate, he merely dis-

locates the palate and with it the entire vocal organ, to the ultimate ruin of the voice.

This is the natural law that must be observed.

We have learned now that a true musical tone consists of a fundamental note and a series of overtones. The ear is quite capable of recognizing many of these overtones. The most obvious can be readily separated from its fundamental by a simple experiment.

The overtones arrange themselves in a definite order as follows:

1. The fundamental tone. (1st Key.)
2. An overtone one octave above the fundamental.
3. An overtone a fifth above the octave.
4. An overtone two octaves above the fundamental.
5. An overtone a major third above the second octave.
6. An overtone a major fifth above the second octave.

If you have a piano try this experiment:

Without sound hold down the middle "C"; then with considerable force strike the "C" one octave below and immediately release it. You will hear the middle "C" very distinctly, although you did not strike it. Now in succession hold down each of the keys "G," "C," "E," and "G" above the middle "C," while you strike and release the fundamental bass "C." If your piano is in tune you will distinctly hear each separate key sounding as you hold it down, while striking the fundamental key, the "C" below the middle "C."

A musical tone is rich in quality when all the overtones just indicated are present in their fullness. Such a tone is always rich and strong. A tone that is weak and thin is so because of the absence or the weakness of the overtones.

The vocalist's efforts, whether singer or speaker, must be directed toward obtaining a full, strong voice, because only then can it also be a voice rich and superior in quality.

Another good illustration of overtones is that of likening a tone to the action of throwing a pebble into a still pond, which causes ripples to form in all directions in a circular fashion from the spot at which the pebble disappeared. In the center the ripples are well pronounced, but as they broaden out they gradually diminish in intensity until they finally disappear altogether. A large stone would cause stronger and broader ripples to form. So it is with a tone in which the exciting force is initially powerful enough to cause the overtones (ripples) to continue to a great distance. The power and efficiency of the initial tone determines the quality and distinctness of the tone.

EXERCISES TO LESSON XXV

It is of the utmost importance that you should thoroughly understand the part which the hyo-glossus muscle plays in the stretching of the vocal chords. As I have stated before, the chord stretching is done by means of muscles which run up and down from the larynx, and each of these muscles must possess a relative strength. It is only the hyo-glossus muscle, however, that need be trained. This muscle, although broad, is very thin, while the other muscles are thick and are also attached to bones which give them a firm hold. The hyo-glossus muscle controls the larynx and the stronger it is, the easier it can stretch the vocal chords.

Its work might be compared to that of an acrobat pulling himself upward on a trapeze. The trapeze affords to the arms a firm hold and if the arm muscles

are strong enough, the person can raise himself; but if they are not, he must acquire the necessary strength through training. This is true of the vocal muscles. If the hyoid muscle is weak it cannot stretch the chords, therefore it must be trained. When this muscle is trained it does the stretching easily and the result is a good voice. The genio-glossus muscle stands in the same relation to the hyoid muscle that the trapeze does to the acrobat; it is a resistance against which the stretching can be done.

First: Place the soft point of your forefinger under the front of the tongue, determine that the tongue shall not move backward, then push against the tongue and observe that it becomes tense and hard. Push gradually harder and harder while you still determine that the tongue should not move backward. After trying this a few times you will find that even your strongest push cannot force the tongue out of place. You see, Nature has made the chin muscles strong so that the hyoid muscle could use it as a brace or support. This is another physiological proof of the correctness of the method I am teaching.

By this time you appreciate the necessity of exercising the hyoid muscle against strong resistance. The reason the old methods of teaching singing and speaking have not been successful, is because they did not provide for the strengthening and developing of this weak muscle. The exercise with the thumb under the tongue must be practiced as often as you can each day and always until the tongue becomes tired. As the hyoid muscle strengthens, you will gradually notice, on the under side of the tongue, a place where the tongue seems to part in two. This is where the chin muscle and the hyoid muscle meet and pull against each other.

Those who are not professionally compelled to do so, should sing as little as possible until the voice shows indications of coming full, free and strong. Bear in mind that for every note sung, there should be a corresponding beat under the tongue. Be guided by this and sing only so high as the beat is perceptible, and no higher. When the tongue muscle is strong enough to tense the vocal chords correctly for a higher note, the beat will be in evidence and can be felt by the little finger. This beat develops quickly up to "F" on the fifth line, but from there on the progress is always slower; in many persons a long-continued practice is needed to develop the great strength.

The speaker will make more rapid progress than the singer unless his muscles are very weak when he begins. You must continue the thumb under the tongue exercise until your voice comes full, free and strong. If the front of the tongue remains loose and the rear is contracted, as proven by the beat of the muscle upon the thumb, you can be sure that you are practicing the exercises correctly and progressing satisfactorily. Remember very much practice of this exercise is needed from now on; practice all you can every day.

PREVENTING NASAL TONES

When the hyoid muscle is not strong enough to stretch the vocal chords sufficiently to produce the higher tones, the singer is frequently tempted to direct these tones toward the palate and the head; in fact he is often taught to do so. This mode of singing is incorrect and soon becomes nasal. The humming which is sometimes resorted to, is also useless. Even speakers sometimes acquire the habit of speaking through the nose. If you have acquired this fault, you should make the following test:

Second: Place the soft part of your thumb against the place where the soft palate meets the hard palate in the roof of the mouth and breathe a few times through the nose. If you find that the soft palate presses lightly on the thumb, it is a proof that the palate and thyroid muscles are relaxed, leaving the passage to the nose open, and this would allow the tone to follow the wrong course. Still, the palate should not be raised, but should stretch backward sufficiently to close the passage to the nose.

Third: Speak the letter "P" a few times with the lips only, avoiding the vowel "e" sound. Then close the lips tightly and hold them so while you repeatedly try to pronounce the "P" in the rear of the mouth. Note the place in the mouth where you feel the air pressure. When you are mentally sure of the location, avoid singing or speaking from this place. This exercise is an example used simply to point out a vocal defect. When the tongue muscle has been made sufficiently strong, the nasal sounds will disappear and the correct sound issue from the natural place. Always intend to speak or sing out of the tongue. Think the tongue loose but active.

THE MOUTH

To open the mouth widely during singing or speaking is always harmful, because it relaxes the important reinforcing facial muscles and impairs the tones.

Fourth: Place the points of the forefinger and thumb together as you do to take a pinch of salt, and in this position lay them between the teeth, allowing the teeth to rest against the rear ends of the finger nails. Observe the size of the opening and remember that in singing or speaking the mouth should **never** be opened wider than this. Now, with the teeth touching

the nails and the lips touching the flesh of the finger and thumb, speak out "ah" and "ooh." You will find that the lips attempt to draw together. Next pronounce all the vowels and then some words and sentences, being careful to see that the lips do not draw away from the fingers, but, instead, press them slightly. The lips should never be drawn away from the teeth; they should always cover them. When you know the right opening of the mouth, use the tryhedron, and remember just where it fits between the teeth. The tryhedron is the little saw-toothed triangular piece of wood. If you have the tendency to expose the teeth, gradually try to overcome that fault.

THE JAW

When the hyoid muscle has been fully developed, neither the singer nor the speaker will be tempted to use any other than the legitimate muscles, because the vocal organ will then be normal. Because very few people possess a naturally strong hyoid muscle, they unconsciously try to help their voices by other means. The singer, for instance, finds that his high tones are, at a certain pitch, thin and falsetto, while up to that pitch he can sing with a chest voice.

He does not know the **cause** of his trouble, but supposes that he is not exerting himself sufficiently and in his effort to increase his higher tones to the volume of the chest tones, he calls the chewing muscles to his assistance. There is a muscle which runs in a direct line from the lower chin to the hyoid bone. This muscle, with the assistance of the chewing muscles, can stretch the vocal chords, but this kind of stretching is wrong. The results are very deceptive. Through the use of this muscle the singer can quickly acquire a large tone, but it means the ultimate ruin of his voice.

Remember this, if the chewing muscles are not used in singing or speaking, this muscle from the chin to the hyoid bone cannot contract and therefore can do no damage, therefore the jaw should remain flexible.

Fifth: Close your mouth and press your closed fist hard against the underpart of the chin. Then try to open your mouth against this pressure and observe how stiff and tense the jaw feels. Now withdraw the fist suddenly and notice how loose and comfortable the jaw feels now. Observe the contrast between stiff and loose jaw. This is the way it should feel while singing and speaking. You will also find that when the fist is removed the mouth does not open much. This is the natural position of the jaw and mouth. In this position the tongue and palate muscles work freely and it is only then that they can reinforce the tone.

POSITION OF THE BODY

The body should be held neither stiff nor relaxed. In a relaxed position, the muscles lose their firm hold and cannot work effectively. In a stiff position, they are already contracted and of course cannot be further contracted without being forced. Both of these faults interfere with the breathing organs and through them with the vocal organ. You must try to hold your body flexible and ready to respond at an instant's notice.

Sixth: Stand in an extremely upright position, with the head thrown back, chin drawn in and the chest expanded. Then suddenly relax as if exhausted, allowing the body to drop forward, but remain standing. Repeat many times. Later on, as you relax, let the arms swing forward, so that the hands touch. Hold this loose, drooping position and observe that the shoulder blades stand out prominently like two wings spread apart. Then think that you will suddenly but

easily adjust the wings. In the effort to adjust them by drawing in the shoulder blades, you will find that the body and the head are drawn up into a perfectly free and natural position. Always hold this position by thinking of the shoulder blades as wings resting deep and loosely down in the back. The correct position of the body is flexible, neither stiff nor loose.

THE VOCAL ORGAN AND HEALTH

The swallowing muscles, which run directly into the stomach, are also connected with the vocal organ. For this reason, anything that affects the general health is also injurious to the voice. A weak stomach, for instance, affects the vocal muscles and vice versa. Usually, things which are not injurious to the general health, are not detrimental to the voice, and as the vocal chords are so well protected, there is no need of coddling the throat.

If you have carefully observed my instructions and practiced each exercise in its order and for a sufficient length of time, your vocal organ will now be strong enough to permit you to sing or speak regularly. Do not attempt to do too much at first. Begin by singing or speaking for half an hour each day and increase the time daily as you find that you do not become tired. Every little gain you make will be permanent. If you find you have not yet as much vocal strength as you require, continue the thumb and tongue exercise. You cannot well over-exercise the hyoid muscle, so have no fear on that point. And remember this, there are no heights up to perfection that you cannot reach, if you conscientiously persist in the exercises I have provided for you in these instructions. These exercises, and the ones that will follow in later lessons, will give you the strength and tone which constitute the perfect voice.

EXAMINATION QUESTIONS ON LESSON XXV

1. What note or pitch has been considered normal tone for declamation and chanting?
2. What constitutes pitch?
3. What are overtones?
4. If a voice is thin or weak, are overtones possible?
5. What is the fundamental key to a beautiful voice?
6. Does the experiment with the fork and resonator convince you that my method is in accord with natural scientific laws?
7. Can you create resonance by directing the voice either to the chest or to the head?
8. Is it plain to you that it is not the air within the chest, throat or head that makes resonance possible, but the muscles, cartilages, bones?
9. Is your voice ever nasal?
10. Do you see the difference between loose, stiff and flexible conditions, and which of these is right?

LESSON XXVI

A SPECIAL DISCUSSION ON PHYSICAL SCIENCE AS RELATED TO THE VOCALIST—BREATHING, FOOD AND ENERGY

With this lesson begins a very important part of this course. The question of correct breathing will now be treated in an exact and scientific manner, based upon close analysis of all the organs involved. Correct living and the influence of food upon physical energy should be considered in connection with the study of voice, and a consideration of these points will introduce the special lessons on correct breathing.

Every now and then someone announces a specific cure of all bodily ills by adopting special diets. In the domain of the voice there have been many who claimed to develop the voice merely by the observation of a special food diet, special breathing exercises, mental processes and even hypnotic suggestion. I remember, many years ago, when I was a professor in college, walking one morning in the corridor, that a student came up to me and in all earnestness propounded the theory that birds could warble with such marvelous effectiveness, because they lived principally on seeds, and didn't I think that if he lived a vegetarian life, his voice would improve faster than in any other way! Just then a donkey on a nearby hill brayed. "There," I told him, " is your answer; that fellow never touches even a worm, he is **strictly** vegetarian, but it does not seem to have improved his voice to any marked degree."

The law of God and the laws of Nature never change. If these laws are observed, you will enjoy physical and mental health and, in modest measure, all the happiness which is possible in the present state of society.

But if you violate any of the laws you will suffer, not as a punishment, but as the natural and logical consequence of your act. You cannot evade these consequences by any specific prescription; the only way is to conform to the law, and when you are again in harmony with the laws, health and happiness will again be yours.

The laws of health may be violated without your will, even without your knowledge, nevertheless you will suffer until equilibrium is restored. You are not to be blamed for having toothache, for instance; the cause of that is beyond your power of prevention, but modern science of dentistry has discovered that decayed teeth expose the nerves and that by filling the cavity of a tooth, the nerve resumes its normal healthy condition.

If you should be so unfortunate as to break an arm, a good surgeon will reset it and in time the pain will cease and your arm will be restored to usefulness. The way to a resumption of natural conditions was observed in both cases.

The voice is so much a part of your individuality, that anything which tends to interfere with it, is a sure sign of severe disobedience of some natural law.

Now whether a defective vocal organ is the cause of other bodily ills, such as consumption, nervousness, mental depression, etc., or whether these are the causes of a defective vocal organ, cannot be stated positively.

The important point is that a practical remedy has been found to develop the vocal organ to the highest state of perfection; and the assumption, backed by experience, is that a perfectly developed vocal organ will invariably produce a normal function of the entire throat tract and improve the physical condition of all the parts connected with the throat. Even the stomach must of necessity depend, to some extent at least, upon a sound throat, because the aesophagus or food pipe reaches from

the tongue downward into the stomach. Of course the opposite is just as true, that whatever affects the stomach or any part of the digestive tract, will in time injure the voice.

Fig. 146

AMPHION, KING OF THEBES

It is said that when he played on his lyre the stones moved of their own accord and took their places in the wall.

"'Tis said he had a tuneful tongue,
Such happy intonation,
Wherever he sat down and sung
He left a small plantation, etc."

—*Tennyson*

No special diet need be observed by those seeking a superior voice, but certainly they should observe the laws of hygienic and moral living in addition to the direct physical practice of developing the vocal organ.

The object of taking breath is not so much that of filling the lungs with air, as of obtaining the oxygen in the air we breathe. So in taking food, the object is to obtain certain chemical properties contained in the food

we eat and which are just as necessary for the body as the oxygen which transforms the food into its original elements.

More than one-half of the earth crust consists of oxygen. The water we drink is eight-ninths oxygen by weight, the air we breathe and the food we eat are largely oxygen.

A treatise upon breathing should, I think, contain some information on the subject of food and its necessity to the well-being of the body. I cannot do better than repeat a recent article by Dr. W. A. Evans in the "Chicago Tribune."

FOOD AND ENERGY

"We eat food because we are hungry, because we like its taste, because of an instinct which guides us to select what is good for us and to reject what is harmful, and because of customs and habits. We may never have heard of calories, but somewhere in us there is a machinery which makes us crave heat-making foods in cold weather and protein foods when we have labored hard. Under special circumstances we crave salt, and the special craving at times for water we have set apart from hunger and call thirst.

The cravings and instincts of animals and uncivilized men, the civilized man has studied until he not only knows them practically better than any wild animal or savage man, but he knows the science which underlies them.

The savage knows that there are certain foods which he must eat in cold weather. The scientist first called these heat-making foods. Then he discovered that these foods are used by the body as fuels through processes quite similar to burning. Next it was discovered that when the fuel foods are burned in the body they make

just the same amount of heat they make when burned outside the body.

Next it became necessary to have a standard for measuring the amounts of heat—something similar to yardsticks, pint measures, and pound weights. The standard hit upon is called a calorie. A calorie is the amount of heat necessary to raise the temperature of one pound of water from zero to 4 degrees Fahrenheit.

The next discovery was that the same quality which made heat could make energy. That was not a remarkable discovery since there were so many related facts that were common knowledge. For instance, fuel under a boiler is burned to make heat, which in turn is used to make steam, and this is used to produce work or energy.

Since heat values and energy values were the same and interchangeable, it was concluded that the measure known as the calorie would answer for both fuel foods and energy foods. The savage sensed that when he had worked hard, fought hard or hunted hard he needed meat; that his growing young needed milk and eggs; that the meat eaters conquered the vegetable eaters and the fruit eaters.

The scientist discovered that work wore the tissues of the body; that for the repair of waste, proteins and salts were required; that the proteins from meat, milk, and eggs were better repairers than the proteins from vegetables.

There is no scientific measure of protein that corresponds to the calorie as a measure of heat and energy. The best that can be said is that a pound of a given food contains a certain number of ounces or grains of protein, and also that the human body under certain conditions requires a certain number of ounces of protein to repair wear and tear.

Next came the explanation of the advantage of a meat over a vegetable diet as a repairer of wear. Proteins are not simple substances. They, in turn, can be split up into amino acids. The amino acids in protein from meat are better suited to repair the wear in the body of the human animal than are those in the protein from vegetables.

At the head of the list are the proteins of milk and eggs, then come those from meats. The amino acids in gelatin are so different from those of meat that we know they cannot repair waste by themselves. We call them incomplete proteins. Among the vegetable proteins some are more nearly what the human body requires than are others.

It is no whim of taste that men prefer wheat bread. It is not because wheat came from Palestine. Wheat protein is nearest perfect of all the vegetable proteins. The amino acids of corn protein are not exactly right for the human animal. Wild animals know that certain mineral foods are necessary. They travel long distances to reach "licks." On the one hand where there is enough lime the animals are strong and heavy. On the other they avoid the bad lands where there is an excess of certain minerals.

The scientists explain all of this by saying that certain amounts of certain salts are necessary for the maintenance of bodily well-being. Furthermore, they say that when the amount that is taken in is beyond the needs of the body, the excess is either passed through the body without being absorbed or is absorbed and in greatest part immediately thrown off.

And, finally, the knowledge that freshness in certain foods is necessary at times, is instinctive. The hibernating animal escaping in the spring goes for young green

twigs, the young of all animal kind are fed on milk fresh from a mother.

The scientist tells us that there are substances called vitamines; that these are necessary for continued good health, that they are delicate and that much disturbance of a food is liable to get rid of its vitamines; that this vitamine quality, whatever it is, is a delicate quality.

To boil milk destroys this quality, to polish rice removes it. To get it in sufficient quantity possibly we need to eat some fruit and some fresh vegetables occasionally. That food may be digestible; it is desirable that it be palatable. Its odor and its taste must appeal to the proper brain centers. Whether the taste be natural or acquired, it must be catered to.

That the process of digestion and absorption may proceed normally it is necessary that the foods eaten should have proper bulk and consistency. Let us illustrate in this way: The starch in dough can be cooked in a few minutes; that in oatmeal is so mixed with cellulose or fiber, that hours of cooking are required that the heat may get at the starch granules and cook them.

The digestive juices cannot get at food elements until the food has been properly broken up, and later absorption cannot take place until the digested food is a proper solution or suspension.

For proper action of the intestines sufficient bulk and sufficient moisture are necessary. The great sources of heat and energy are fats and starches. Sugars are closely akin to starches. The great sources of protein are milk, meats, eggs and grain. The great sources of salts are fruits, vegetables, and table salt. The great sources of vitamines are vegetables, fruits and milk. The great sources of bulky constituents are vegetables, fruits, and the outer parts of grain.

The secretions of the body can change many of the elements of foods. Starches are changed into sugar. They can be stored in the body as fat or as sugars or they can be burned into carbonic acid with the formation of heat or energy or both. Fats can be stored in the body as fats or as sugars, or they can be burned into carbonic acid with the formation of heat and energy.

Protein can be built up as a body tissue or it can be converted into fat or sugar and stored. It can be burned into urea and allied substances and excreted by the body principally by the kidneys, or it can be burned into carbonic acid and excreted principally by the lungs. While protein can be converted into fats or sugars, neither fats nor sugars can be converted into protein, such as muscle or tissue cells.

So far instinct has blazed the paths which science has later followed. Some of the paths were made plain by instinct. They were broad highways easily seen and followed. Some of them were no more than Indian trails—a leaf turned here, a track there—from these science learned but little. From this point on science gets little help from instinct.

The elementary composition of the body of an average person weighing 150 pounds is about as follows:

Oxygen	97.5 pounds
Carbon	27 pounds
Hydrogen	15 pounds
Nitrogen	4.5 pounds
Calcium	3 pounds
Phosphorus	1.5 pounds
Potassium	.52 or over 8 ounces
Sulphur	.375 or over 6 ounces
Sodium	.225 or 3.6 ounces
Chlorine	.225 or 3.6 ounces
Magnesium	.075 or about 1 ounce
Iron	.006 or about 40 grams

And faint traces of a few other chemicals.

To supply the daily waste from wear and the energy and heat required, the food must contain varying quantities of the above ingredients. Most of the oxygen needed is taken in with the air, but all the other elements are taken as food. The measure of the amount of food required is generally expressed in calories in speaking of the heat and energy requirements, and in grains or ounces of protein in speaking of the repair requirements. Generally the amount of minerals required is left to chance or instinct.

The number of calories required for a man of average size, with good digestion and assimilation, varies according to his work as follows:

In bed 24 hours	1,600 to 1,800
At rest, but sitting most of the day	2,000 to 2,300
Work chiefly done sitting	2,200 to 2,800
Work chiefly done standing or walking	2,700 to 3,000
Work developing muscular strength	3,000 to 3,500
Work requiring severe effort	4,000 to 6,000

The number of calories per pound of weight per hour according to different kinds of activity is as follows:

Sleeping	½
Sitting quietly	⅗
Standing	¾
Light exercise	1
Moderate exercise	1¼ to 1½
Active exercise	1¾ to 2
Severe exercise	3 or more

On the above basis Dr. Rose, in "Feeding the Family," gives the following day's menu for a workingman:

Breakfast

Food and measure.	Weight, ounces	Protein, cal's.	Tot. cal's.
Oatmeal mush, 1½ cups	12	25	150
Creamed dried beef, ⅚ cup	6	40	250
New England cornbread, large slice	4	32	400
Oleomargarine, 2 tablespoons	.9	..	200
Milk, in cereal and coffee, ⅝ cup	5.1	19	100
Sugar for cereal and coffee, 2 tablespoons	.9	..	100
Coffee, 1 cup	...	..	...
			1,200

Luncheon

Kidney bean stew, 1¾ cups	18	100	355
Rye bread, ¼ loaf	2.8	28	200
Oleomargarine, 2 tablespoons	.9	..	200
Banana, 1 large	5.5	5	100
Molasses cookies, 2 large	1.5	12	200
Milk for coffee, 3 tablespoons	2	8	40
Sugar for coffee, 1 tablespoon (scant)	.5	..	50
Coffee, 1 cup	...	..	...
			1,145

Dinner

Stuffed beef heart, 1 serving	4	84	400
Potatoes, boiled, 2 small	5.4	16	150
Carrots, 2 small	5	5	50
White bread, ⅜ loaf	3.9	42	300
Oleomargarine, 2 tablespoons	.9	..	200
Date pudding sauce, 1 serving	3.5	22	310
Brown sugar for clear, 2 tablespoons	.8	..	100
Milk for coffee, 2 tablespoons	2	8	40
Sugar for coffee, 1 tablespoon (scant)	.5	..	50
Coffee, 1 cup	...	..	...
			1,600
		446	3,945

Enough for a man doing heavy work. Cost about 40 cents. This cost, of course, was computed before the present high scale of necessities.

EXERCISES TO LESSON XXVI

STRONG AND SOFT TONES—FF AND PP—INCREASING AND DECREASING VOICE

STRONG VOICE

Strictly speaking, the ability to change the voice, to increase or decrease it at will, from loud to soft or vice versa, to connect the tones or sing them detached, that is, to use the legato, staccato or portamento effects, belongs to the branch of "expression" and not to "voice development." However, so many of my students belong to the professional and higher walks of life, that is, so many of them are public speakers and singers, that it seems advisable to give you all some practical method, whereby you can utilize your voices to the best effect even now.

Both in speaking and singing, a constant change of voice is needed to gain greater effect or at least to avoid monotony. This constant change is also demanded in order to relax the vocal muscles from the necessary great tension (which however should never be felt) to one of less tension.

It seems quite natural for both speakers and singers to expect that when they speak or sing with a loud or strong voice they must **first** exert themselves correspondingly and **second** they must **feel** the exertion somewhere in the body. Indeed, this is just what is being taught in some schools, studios and conservatories.

It is **true** that greater exertion must be made, but it is **not** true that greater exertion must be felt. This will seem like a contradiction to many, because their experience has taught them that in lifting a heavy weight, they must exert themselves correspondingly more than in lifting a lesser weight. This however, does not apply to either the action of the vocal organ or the breathing apparatus.

In the many lessons on the vocal organ, it has been shown that great strength of the main stretching muscles is required, because these muscles cannot exercise greater strength than they possess. In other words, if the stretching muscles are weak, you cannot by any possible chance increase the strength by any sudden outside effort. Only constant practice of the strength-producing exercises, often for a very long period, will so strengthen them that they will respond perfectly to all the demands made upon them. When they have become strong, no exertion except the exertion of will power is needed to utilize them to produce any desired note or tone.

The same is true of the breathing muscles, as will be further shown in the lessons which follow this one.

1. **Speaking.** Place your left hand against the lower abdomen and the right hand upon the chest. Take your usual breath and place the tip of the tongue **lightly** against the hard palate just behind the upper teeth. Now breathe out whole with the sound of "S" till the breath is exhausted. Notice that the chest sinks gradually to its level of rest as the breath escapes, but that the abdomen has made very little, if any, motion. Only at the last when all the breath has been used up, will you feel that the sides of the abdomen are drawn slightly inward, toward each other. This proves that the abdominal muscles have resumed their natural relaxed position, the same as the chest.

Now try several times to breathe or rather to whisper "S" as long as your breath will last, not trying to prolong the breath, but just let it go of itself. Of course hold the hands as before. Then **suddenly** make the "S" as if you were hissing at somebody. Notice that this hissing can be felt in the chest and in the abdomen, also that the chest sinks much quicker than before, because

the breath is being used up much faster. Now make the hissing sound "S" in a regular succession at "One," pause, "Two," pause, "Three", pause, 1,2,3, and notice that at each "S" the abdomen draws inward suddenly but very little.

Now try the same experiment in your regular speaking voice, by calling out "ha," "ha," "ha." The second time determine to call stronger then before and the third time call out "ha," "ha," "ha," then "he," "he," "he," or "hi," "hi," "hi," as if you were calling to a friend across the street. Notice again, that each time the abdomen involuntarily draws a little together; it jerks a little at each call. This **sudden** but easy contraction of the abdominal muscles is the chief cause of the stronger breath pressure with louder voice. Now read aloud short sentences, for instance, a few lines from the following: "Stone-Age Stuff," by Edmund Vance Cooke, in the Saturday Evening Post.

STONE-AGE STUFF

"You can do a-ny-thing that you try to do
If only you try to do it.
You must get a little start,
You must have a little heart,
Then a long, strong pull, and go to it!
Oh, it may take years to worry it through,
And you may break a leg or an arm or two!
But in the by and by you will find it true
That you'll do anything that you try to do—
If only you try to do it!

You can be a-ny-thing that you want to be
If you're sure that you want to be it.
You must keep your little mind
Very constantly inclined
To the far-places long before you see it.

Life may seem a struggle in an angry sea;
But beat along to windward and beware the drift to lee,
And some day you'll be sailing on the blue and free;
For you'll be anything that you want to be—
If only you want to be it!

You can make a-ny mark that you want to make
If only you want to make it,
You must lug your little pack,
You must plug along the track,
You must keep the pace and nevermore forsake it,
Oh, your brain may pain and your muscles ache,
Your soul may sicken and your back may break;
But keep your smile in the game of give-and-take
And you'll make any mark that you want to make—
If only you want to make it!

But, whatever the aim of your make-be-do,
Be sure that you want to reach it,
For the thing is up to you,
Quite too trite and quite too true
For me to try to sing it or to screech it.
All of us are talking, altho' few may teach;
Few of us will practice what we daily preach;
Most of our observance is honored in the breach.
But, in reaching any goal that you want to reach,
Be sure that you want to reach it!"

For instance, read the first few lines in a very carelessly speaking voice; then read slowly and **very** distinctly. At the first word "You," intend to make the easy but rather sudden motion with the abdomen; only this first and single motion is necessary. With a little practice you will be able to read an entire sentence upon the breath with which you started. Repeat the same sentence, but speak it as if you were calling it to a friend across the street, with no especial exertion, but very distinctly.

For a strong, full voice, start each sentence by **thinking** a sudden and easy contraction of the lower abdomen. At first make longer pauses between each sentence and be sure to realize a complete relaxation of the abdomen during the pause or rest. Realize the difference between **thinking** a contraction in the abdomen and **making** this contraction. If you make the contraction, you are forcing or overdoing, but if you merely **think** the contraction, the abdominal muscles will contract freely and loosely and yet strongly.

To **think** is right; to **force** is wrong.

2. **Singing**: After the singer has had some experience with the exercises under the head of "Speaking," he may proceed to use the same experience in singing. For instance, "'Tis the Last Rose of Summer." At first sing a sentence carelessly, not trying to make the tones especially good, and observe the action of the abdominal muscles. Next sing the same sentence distinctly, beginning the first word with an easy but sudden contraction of the abdominal muscles, as in speaking. After that sing as if you wanted to be heard across the street or by the last in a large audience; this time sing slowly, almost as if you were spelling each word. Remember not to use physical force, but merely will power.

Take breath whenever a sentence permits it. The composer usually groups the notes into a musical phrase in accordance with the sense of the words, so that frequent breath will not mar the flow of the melody, provided you take your breath quickly enough.

Most singers use the abdominal attack too often. Only at the beginning of each sentence or phrase should it be used. Experience will teach one just where to begin and to leave off. Start with short phrases, gradually using longer ones.

SOFT VOICE

1. **Speaking:** Review the lesson and exercises on the "Palate Attack." Whisper "ha" as taught in Lesson XVI. Observe carefully that the chest and abdomen remain almost stationary. Now speak several sentences, at first quickly, then gradually slower; at last aim to speak each syllable and word as if you were whispering a great secret to someone across the room. With the left hand on the lower abdomen you will notice only a very slight movement of the abdomen; so slight indeed is this motion, that it seems as if the abdomen were at rest. Notice that the voice seems to come entirely from the head and that it sounds higher than usual.

2. **Singing**: Proceed in the same way for singing. There must be only the slightest motion of the abdomen. The tones will be very soft and clear. The voice will seem to come entirely from the upper part of the head and the throat will remain free and open when this exercise is rightly understood. The effect will be flute-like.

CRESCENDO AND DECRESCENDO

To swell the tone, to increase from soft to loud, is accomplished by starting the tone softly in the head, as for a clear whisper. No motion should be made or felt on the abdomen. The abdominal muscles should be gradually contracted until the voice has reached its greatest strength.

Example: Rest the tip of the tongue against the hard palate, just back of the upper teeth, and whisper a soft "S." Gradually let the abdominal muscles contract more and more, but without making any great physical effort. This gradual contraction of the abdominal muscles increases the "S" sound in proportion to the contraction.

Start again as before, but after a little, **very suddenly** increase the contraction in the abdomen and notice a very sharp, sudden hissing sound.

Now start a singing tone very softly; increase to the utmost and hold till all the breath is consumed, then stop for a few counts. Repeat on other notes.

For sudden and very strong accents, start the tone softly and suddenly let the abdominal muscles contract sharply. You will then get a very strong tone, without any apparent effort.

Never let your strongest tone become unmusical. Always stop at the point where the voice would change into a shriek or yell.

For decrescendo proceed in a reverse manner. Start the tone with abdominal attack and gradually relax the abdomen and expect to feel the tone in the head, where it gradually diminishes to a soft but clear whisper. In this wise very beautiful effects can be attained. These effects are rare nowadays, and would be all the more appreciated by an audience.

Patient study and good taste are required to acquire mastery over these beautiful effects.

EXAMINATION QUESTIONS ON LESSON XXVI

1. Can a superior voice be attained by any special food diet?
2. Why do people get ill?
3. What is the object of eating food?
4. Should you feel any great physical exertion in uttering strong tones?
5. Can you control the abdominal muscles?
6. Can you sing or speak with a strong voice?
7. Can you sing or speak with a soft voice?
8. Can you swell and diminish?
9. Is your throat free now?
10. Do you speak or sing from the tongue?

LESSON XXVII

PERFECT BREATHING

Instructions for Developing a Correct Method of Breathing for Singers and Speakers

The success which has followed my instructions on voice building induced me also to make my system of breathing available to those who have taken the voice instructions, and to others who desire the correct system of breathing.

These instructions enable everyone to obtain a perfect method of breathing, based on an exact scientific foundation. By following them, the breathing apparatus can be trained and perfected. Weakness, such as short breath, gasping, tenseness of the abdomen, heart palpitations, fainting spells, nervousness, lung troubles, and, according to the testimony of prominent physicians, even some forms of tumors can be avoided.

All previous methods of breathing have been based more or less on opinions and suppositions. They have lacked the exact scientific foundation, which alone can be an assured guide to a successful system of study. Only a correct analysis of the parts of the body, its structure, and of the muscles which adjust and move the parts, can lead one to a natural, easy, and free system of breathing. This is accomplished through the study of these instructions alone.

Most everyone suffers to a greater or less degree from the abuse and misuse of the breathing organs, especially the singer and the public speaker. To them correct breathing is of the utmost value. Those who have studied the "Perfect Voice" system can now add

to it a perfect system of breathing, which will give them greater freedom, greater volume of tone, and most assuredly, better health and prolonged life.

General Review of the Latest Discoveries Regarding Breath. The Importance of Breath-Movement

Among the lower forms of life (worms, etc.) we find generally that a diffusive gas exchange through the skin is sufficient to sustain the process of oxidation necessary to life. Gradually, with the rise of animal life from the lowest to the highest, special organs are provided to supply the necessary process of oxidation, and these organs are supported by the ability to passively or actively move or contract. In the vertebrates are found pocket-like tubes which are called lungs, which by rhythmical expansion and contraction favor the exchange of oxidation and ventilation.

The Physical and Anatomical Basis of Lung-Breath

The expansion and contraction of the lungs has been compared with the action of bellows. It is accomplished through the rhythmical contraction of striped, voluntary muscles, but with the support of an additional weight, similarly as it is done with bellows used in a smithy and in pipe organs, where extra weights have been provided to more quickly expel the air within the bellows. In the human being this additional support is provided for by the natural elasticity of the lungs firstly, and secondly by the bones and ribs which surround the lungs. This bony structure surrounding the lungs is called the thorax or chest. See Figure 147.

Because both the lungs and the chest surrounding them are naturally elastic, an expansion of the lungs

and consequent inrush of air is made possible. This expansion of the lungs is possible by an active voluntary effort, followed by a passive involuntary contraction merely through the elasticity of the chest. But a passive involuntary inspiration followed by an

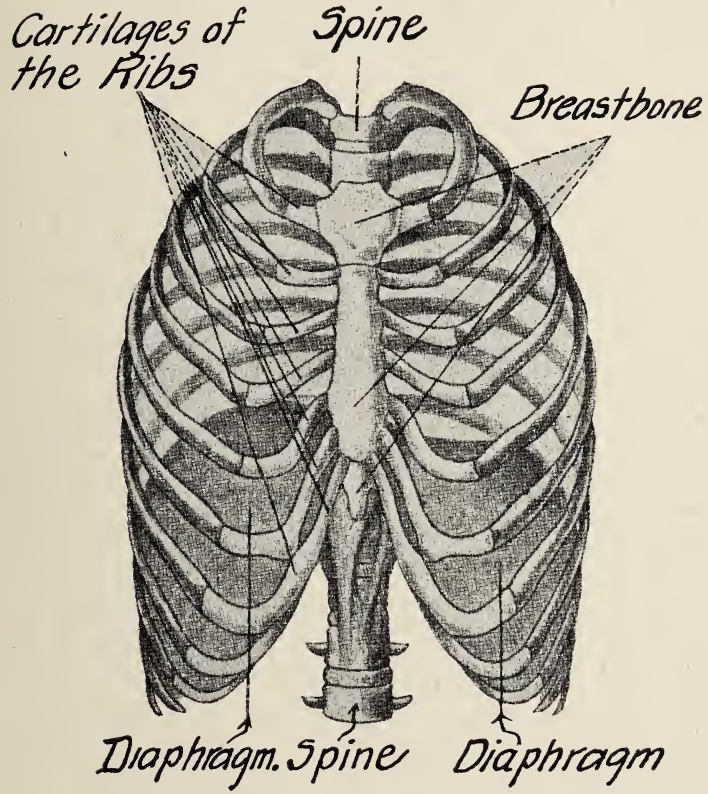


Fig. 147

active voluntary expiration is also possible. Normally, active inspiration alternates with passive expiration.

In the activities which demand both an enlarged breath and greater rapidity of breathing, such as is required for singing and for public speaking, both the inspiration and expiration must be active and voluntary, hence consciously trained and acquired.

The anatomical mechanism of the thorax is such that the elasticity of its parts are called into action by active expansion and contraction. In the upright position of man, the weight of the thorax opposes the expansion, but favors the contraction. The twelve pairs of ribs with the twelve vertebraes to which they are attached (the first pair, however, is not free), and which are through the medium of cartilages combined with the breast bone, are in such a position that they incline downward and forward, hence the expansion of these ribs is only possible through the contracting muscles, and when this contraction ceases, then the weight of the ribs will cause a passive narrowing or collapse of the thorax.

The raising and lowering of the ribs is similar to the movement of spokes around the axle. With the exception of the lowest two ribs, all are connected with the breast bone directly or indirectly by means of cartilaginous continuations. These are bent in such a wise that in raising the ribs they are at the same time projected forward also. It is owing to the elasticity of these cartilage continuations of the bony ribs that an active expansion of the thorax by its connecting muscles is followed by a passive contraction and consequent narrowing, or that a passive expansion can be followed by an active contraction. But the chest cavity is enclosed at its lower extremity by another elastic element, the diaphragm. It forms a muscular wall between the chest and the abdomen. On expanding the thorax, this diaphragm is lowered and thereby adds largely to the space needed for inspiration.

Within this enclosed space of the thorax and diaphragm are placed the two lungs, lying close against the walls and following passively their movements of expansion or contraction.

INSPIRATORY MUSCLES

The normally most important factor of active inspiration is the diaphragm. At every inspiration each one of the muscular fibres of the diaphragm is contracted. Beside the diaphragm there are a number of other muscles which raise and expand the thorax.

EXPIRATORY MUSCLES

The basis of all active expiration, such as is used in singing, speaking, coughing, etc., is formed by the abdominal muscles. These muscles pull upon the ribs downward and thereby narrow or contract the space of the thorax, and since they also press inward upon the abdomen, they push indirectly against the diaphragm, so that it will strongly incline upward and add in the narrowing of the thorax and consequent expelling of the breath.

INSPIRATION
SINGING AND SPEAKING

For public singing and speaking an additional 100 to 150 cubic inches of breath has to be provided for, in less time than a second, unless there is a longer rest between the phrases. The aim must be to obtain the maximum result with the minimum of exertion. The process of inspiration should be instantaneous, but the process of expiration, on the contrary, should be spread over considerable time, as needed for longer and shorter phrases. It is therefore of the utmost importance to know how to inhale with the utmost ease and with the least possible loss of time.

So that the student may understand the anatomical reasons for the instructions which are to follow, and as a proof that such instruction exactly covers the physiological tendency of the different parts of the organs,

a short description of the chest, diaphragm, lungs, abdomen, and the muscles which govern these parts, will be given.

The object of inspiration is to create a larger space for the expansion of the lungs. The object of expiration is to contract this space to the normal size. The lungs are allowed a greater space to expand in, only by those muscles which can expand the ribs. This expansion of the ribs takes place mainly through the contraction of the muscles of the back.

The many different parts of the skeleton of the body are connected with each other by tendons and muscles. The muscles surround the bones and joints and form what we term the flesh of the body. The muscles consist of a contractile substance. The contraction is caused by the will which acts through the nerves which supply the muscles. When a muscle contracts, it becomes shorter and thicker. When the contraction ceases, the muscle resumes its normal shape. As a muscle grows out of one bone and is fastened to another, it will thereby move the bones toward each other. The muscles of the skeleton belong to what is termed "striped" muscles. They may act singly or in groups, moving only one part, or several at the same instant. The muscles of the skeleton are divided into three principal groups, those of the body, the head and the extremities. The muscles of the body again are divided into four groups, the back, the chest, the abdomen and the throat.

MUSCLES DEPEND UPON ONE ANOTHER

The illustration shown in Fig. 148 deserves a careful inspection. Starting from the hip bone (7), muscles are seen to ascend into the shoulder blades

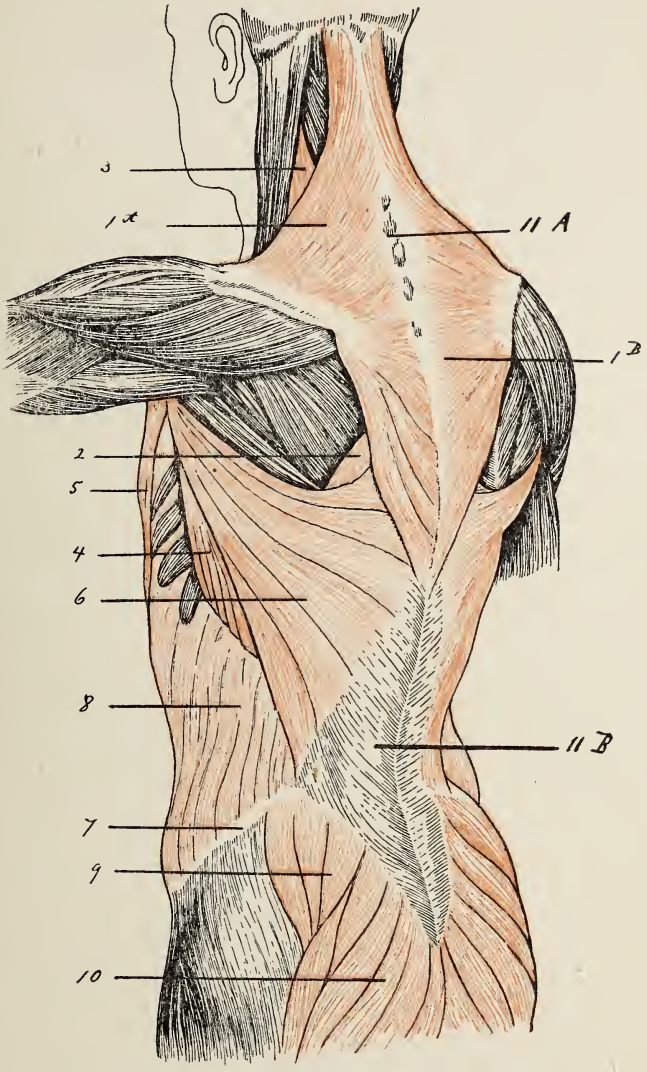


Fig. 148

The Complete Breathing Apparatus.
Expanding and Contracting Muscles.

1 A and B. Trapezius.
2. Rhomboideus.
3 Levator scapula.
4 Serratus magnus.
5 Pectoralis, major and minor.
6. Lattissimus dorsi.
7. Hip bone.
8. Obliquus externus.
9 and 10. Muscles of hips and legs
11 A and B. Spine.

and the ribs. Others descend from the head into the shoulders and from there downward to the chest, ribs, and to the hips. What has already been described so carefully in the previous lessons, that is, the absolute dependence of one set of muscles upon another set, holds good for the breathing apparatus as well. As in the "Perfect Voice" so also in "Perfect Breath." It is remarkable that there is so little displacement of the larger parts, the chest, back, and abdomen. These parts are balanced between muscles which pull upon them both ways, up and down, or forward and backward, so that they are not strained away from other parts or crowded against them.

CORRECT BREATHING EFFORTS DO NOT IMPLY STRONG SENSATIONS

The bodily signs of correct breathing efforts, as will be shown later on, can be detected by the eye or felt by the hand; but these efforts do not excite any noticeable sensations, because in the natural, correct efforts, the different sets of muscles work in harmony with each other. Any effort which excites strong sensation, or causes a strain, is false, because then some set of muscles are opposed by another set, hence there is a tug of war, which we feel as a strain. Although strong efforts are being made, yet they will not be felt as such if the muscles act automatically, that is, if they are not interfered with by other opposing muscles.

In order that the lungs may expand and take in a larger quantity of air, it is necessary that additional space must be provided for the lungs' expansion. This can only be done by the muscles which expand the ribs. The spine in the back and the breast bone in

front are two fixed points; firm bones to which the ribs are attached, and between these two the ribs rotate or pivot on their joints of attachment. The ribs are attached to the vertebraes of the spine by these joints and controlled by muscles which grow from the vertebraes to the ribs, so that when a muscle contracts, it must necessarily move the rib to which it is attached, since, as was mentioned, the vertebrae being a joint of the spine, remains in a fixed, firm position. The attachment to the breast bone in front is formed by a cartilage continuation of the rib to the breast bone. This cartilage forms an angle which straightens when a rib is being moved by its muscles, so that the rib moves not only sidewise but also a little upward.

The main point to be remembered is the fact that only the ribs can be moved, and not as is sometimes taught, the whole chest. It is true that by moving the shoulder blades upward, a feeling of chest lifting is suggested. However, the chest is **not** thereby raised. One might just as well try to lift oneself by the shoe straps as try to raise the true chest. All such endeavors cause a useless strain, and defeat the object for which we seek.

If the extreme ends of a bird's wing were firmly attached to an opposite point of the joint from which the wings are grown, the bird could flap its wings outward and upward. Just such a movement is made by the ribs, and no other is naturally possible.

The shoulder blades and collar bone are connected both with the head and the thorax or chest by muscles which can interfere with the movement of the ribs. If the shoulder blades are raised, the expansion of the ribs will be lessened and made difficult; if they

remain raised during singing, the expiration of breath will be seriously interfered with or almost impossible. Therefore, the shoulder blades must remain in their natural position of rest.

The three principal muscles which hold the shoulder blades in a firm position, are:

1. The Trapezius. It is fastened all along the

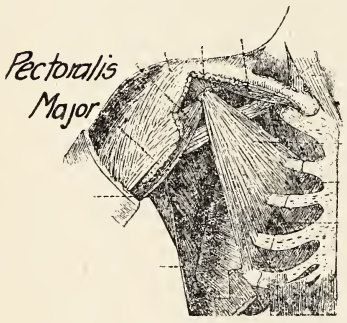


Fig. 150

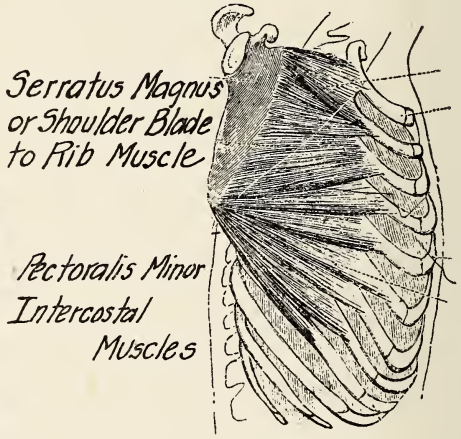


Fig. 149

backbone or spine, from the lowest rib of the back of the head, thus including the entire neck.

2. The Rhomboideus, major and minor. They extend from the lower vertebra of the neck and the four or five upper joints of the back to the shoulder blades.

3. The Levator scapula. To the highest joints of the neck and to the shoulder blades below.

All of these muscles assist in the act of inspiration, as well as the following muscles which extend from the collar bone and shoulder blades to the ribs:

The most powerful of the muscles which extend from the collar bone and shoulder blades to the upper

ribs is (4) the serratus magnus. From the lower edge of the shoulder blades, this muscle stretches forward and downward into the ribs to about the line of the vest pockets. On its way from the shoulder blades to the ribs, it splits into strips or serrations (hence its name). When the shoulder blades are held fixed in their natural position, then the serratus magnus muscle can pull powerfully upon the ribs and cause them to move strongly outward and upward. See also Fig. 149.

5. The pectoralis major and the pectoralis minor also extend from the collar bone and shoulder blades into some of the ribs, and can thereby aid in the expansion of the thorax. See also Fig. 150.

6. The lattissimus dorsi is a large muscular band, fastened below to the hip bone and the vertebraes of the spine. It is attached to the lower ribs and extends upward to terminate into a tendon which is fastened to the inner side of the arm. The parts of this muscle which are attached to the lower ribs draw those ribs outward and upward which are not reached by the serratus magnus. To favor this action, the shoulder blades and the collar bone must also remain fixed.

From each rib extend muscles to the one above and below—these are called the intercostal or "between-rib" muscles. See Fig. 151. There are two sets, one placed on the outside, the external intercostal; the other on the inside, the internal intercostal. Together they line the whole open space between the ribs and form a perfectly tight inclosure or wall. These muscles draw the ribs nearer together. They act both as inspiratory and, in connection with the abdominal muscles, as expiratory muscles.

Only those muscles which are more directly inspiratory have been given. The diaphragm, which is one of the most important breathing muscles, will be treated in another part of these lessons, since for public singing or speaking, its real office is, according to the most recent researches, more expiratory than inspiratory.

It is true that the descending of the dome of the diaphragm somewhat enlarges the cavity of the chest

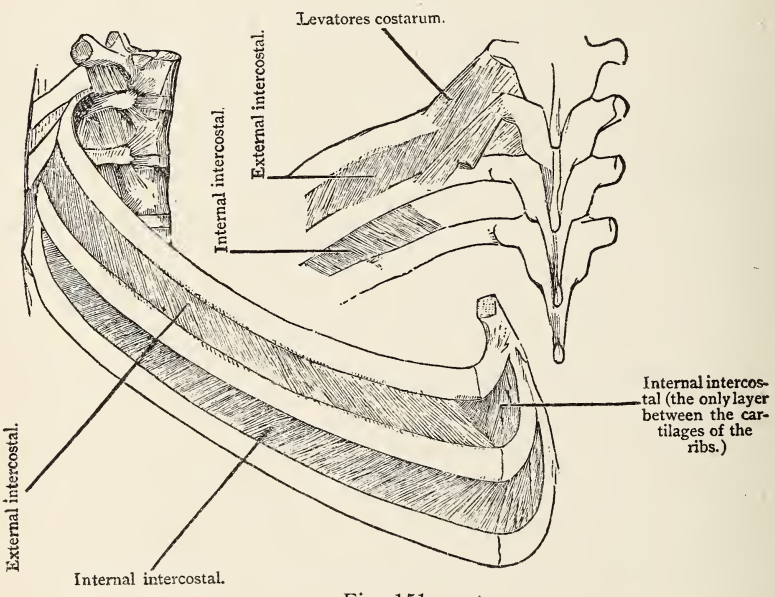


Fig. 151

and permits the lungs to spread downward, thereby assisting the inspiration. But the enlargement of the chest's circumference by the outward spreading ribs is so much larger that the conclusion is arrived at that the inhaling of breath is principally due to the rib movements.

Technical as this first part of the explanations may seem to be to the student, yet it is necessary to a better

understanding of the exercises which will follow. The student is requested to study this part again and again.

EXERCISES FOR LESSON XXVII

RELAXED POSITION OF THE CHEST

Preliminary Exercise to Inspiration

If the spine, and with it the chest, are held too straight, all the muscles are held tightly contracted. In this position an expansion of the ribs becomes extremely difficult, as the following will show:

(1) Stand in an exaggerated upright position, with the head thrown back and the chest expanded. In this straight, unnatural position, take all the possible breath by lifting the chest and notice the sensation of stretching induced, and the extent to which the abdomen is flattened; also notice the degree of physical effort required. This, of course, is a wrong position.

(2) This time let the upper part of the body droop downward and slightly forward, hunching downward like a lazy schoolboy (but of course remain standing). Now, inhale in this loose, relaxed position, all the air you can comfortably hold. Notice that you are taking more breath than before and also that the lessened straining and stretching is very apparent.

(3) Relax the upper chest as before, and now let the arms swing forward in a very loose manner, so that the hands touch. Hold this loose, drooping position, and observe that the shoulder blades stand out prominently like the two wings of a folding door. Then think that you will suddenly but easily close this door.

In the effort to close the door by drawing in the shoulder blades, you will find that the body and the

head are drawn up into a perfectly free and natural position. Always hold this freely upright position by thinking of the shoulder blades as resting deep and loosely down in the back. Do not now care especially about the breath; breathe only as usual, but continue this third exercise a little every day, until it comes with the utmost ease. Its value will appear in the inhaling instructions which follow in the next lesson.

EXAMINATION QUESTIONS ON LESSON XXVII

1. What element of the air is necessary to sustain life?
2. What is the object of breath to the singer or speaker?
3. Which is the organ of breathing?
4. What does expansion of lungs and chest accomplish?
5. What does contraction of lungs and chest accomplish?
6. Are strong efforts needed for breathing?
7. Should the chest be moved for inhaling?
8. Which muscle divides the chest from the abdomen?
9. Can you relax the chest?
10. Can you inhale freely?

LESSON XXVIII

PERFECT BREATHING

Inspiration—(*Continued*)

MUSCLE CONTROL IN GENERAL

Students of voice are often taught to keep all of the chest and abdominal muscles entirely relaxed and loose. Whole systems have been founded on this rule, but of course without success. It must be evident to every intelligent person that no work can be accomplished by relaxed muscles. One could not inhale air, for instance, if the chest expanding muscles remained lax; neither could one exhale, if the muscles which compress the chest were lax—that is, inactive. The reason an intoxicated person cannot control himself is because he has lost the power over his muscles. They have become slack, and therefore are not capable of performing their functions of supporting the body in an upright position.

But if a set of relaxed muscles can perform little or no work, it does not necessarily follow that the muscles should be stiff or hard in order to do this work. Such a condition would be just as incorrect as the other, for stiff muscles cannot perform their work correctly either.

Many singers and speakers, in fact, almost everyone, keep the breathing muscles too tense. This is especially a common fault with women, hence they unconsciously utilize considerably less air than men. So general has this fault become, that it has been accepted as a natural condition of female breathing. Latest researches, how-

ever, have proven that aside from a smaller and more graceful form in women, the breathing apparatus is exactly the same for both sexes and is governed by identical muscles and laws.

Since neither the laxed or the stiff muscles can do their work, another way must exist. This other way is to keep the muscles "flexible."

All muscles which are directly or indirectly concerned in breathing are connected with nerves. The will is communicated through the nerves to the muscles and stimulates them to contraction. Dr. Foster of London, England, describes the process by which the muscles contract in this wise. "One must think of the muscles as having many cells which lie one above the other in rows, like grains of powder. A fibre radiating from the central battery of the brain, leads to each of these grains. Through an impulse of the will, one of these grains is exploded. The muscle contracts instantly and remains contracted until a grain is exploded from the negative battery. Then instantly the muscle springs back into its natural position. When the cells are used up, fatigue appears. During the required time of recuperation, the tiny bacilli of the blood remove the ashes and build up new cells."

It is by this process that the muscles grow stronger. If one tries to force a muscle, it fails to respond. It seems that the positive and negative cells neutralize each other so that no contraction is possible.

THE LESSON THE ABOVE TEACHES

The conclusions which the attentive student cannot fail to draw from the above explanation are that one can only gain control over a muscle by contracting it very quickly, but easily, keeping it so for a second or two and

then letting it relax, and continuing this process until fatigue appears. With patience and perseverance the necessary muscular control can invariably be attained after which constant practice will develop the muscle to great strength.

EXPANSION OF THE THORAX OR CHEST

In the first part of the course, it was explained why the chest or thorax had to be expanded. There are two distinct sets of muscles which move the thorax. One of these sets of muscles opens the thorax and widens it, because the muscles which grow from the spine into the ribs pull the ribs outward and upward. As long as one holds these ribs expanded no breath will escape, because there is then no pressure inward upon the lungs.

The second set of muscles will bring the ribs back to their natural position. When they contract they draw the ribs inward, which causes a pressure upon the lungs, whereby the breath is forced out. The first of these movements is "inspiratory," the second, "expiratory."

Any movement which occurs outside of these two movements in the diaphragm and abdomen should be involuntary and only when the diaphragm and abdomen automatically or involuntarily move with the voluntary expansion and contraction of the ribs, can one be assured of a perfectly free and easy breathing.

EXERCISES ON LESSON XXVIII

(1) Sit comfortably and easy, allowing the entire upper part of the chest to droop loosely, flabbily downward. The position would suggest a sagging of the chest, as if utterly exhausted, or as if you were too lazy to hold the chest straight. Do this several times to learn how loosely you can relax the entire chest. Also learn to

relax instantly. At one count go from the upright chest position into the loosely hanging relaxed position.

(2) Now remember, that the ribs are attached to the spine, therefore they move from the spine, like a double door moving on its hinges. Think or will suddenly, but loosely, easily, that the ribs should move or open outward from the spine. Hold them so while you mentally count "one," "two," and "three," at three let go, when the ribs with the entire chest will resume their natural position, expelling automatically whatever breath there is; of course, hold the mouth slightly open.

(3) Place your hands against the waist line, right and left. Expand or open out from the spine and notice that you feel a decided outward push against the hands. Hold while counting two and let go. The hands should feel the inward closing movements. Remember, all efforts must be very easy. You must never attempt to force any large movement; whatever is easiest, that is right—no more.

(4) Now place your hands so that the finger tips rest against the small of the back, just where the ribs are attached to the vertebrae. Do not put the fingers against the unyielding spine, but just beside it. Suddenly but loosely, think that you expand or open outward in the back, and that you voluntarily and purposely push with that part of the ribs against the finger tips, pushing them also backward or outward. Notice, if right, that you feel a decided swelling against the fingers. Hold for two counts. At "three" let go. Repeat six times and rest a few minutes. Then go over the first three exercises two or three times, then again to the fourth. After you have made sure that there is a decided, but not forced swelling in the back, put one hand against the waist line, the other remaining against the back. On swelling with the back, notice now that there

is also a very decided outward movement in the front, as your hand on the waist will prove.

(5) At count "one" let your upper chest droop loosely downward, at count "two" expand in the back and ribs, at count "three" draw in the back, shoulder blades and ribs or rather, let them cave in, as it were. Notice casually that when the back and the ribs expand, a great deal of air is taken in, although you do not especially try to take in any breath. At count "three," when you let go, the breath escapes with a rush. Repeat this exercise two or three times a day. Keep this up for a week or two. It is very important and a most useful exercise. Review this often for several months, until you form the habit.

INSPIRATION

When you understand fully the last exercise (but not before), proceed with the following:

(1) Place your lips as if saying "ooh," then suddenly relax the lips, at the same time dropping the jaw loosely, very loosely. Imagine yourself saying "ah" at the same time as you drop your jaw for "ah." Thus you will be saying "ooh-ah."

(2) Relax upper body and expand the back, at the same instant whisper the "ooh," notice that you have taken in very much breath without any effort. Hold this position while you mentally count "one," "two," and at the "three," drop the jaw, relax the back, drawing in the shoulder blades, and the same instant breathe out the "ah," that is:

At count one: **Relax** upper chest.

At count two: **Expand** back and sound "ooh" or it may sound "hooh."

At count three: Relax back, drop jaw, and sound "ah" (hooh-ah). Notice that at count "two" you IN-

HALE breath, at count "three" you EXHALE breath. During the exhalation the loosely held body returns to the natural upright position. After some practice you should be able to take a deep breath in a half second without whispering "ooh." After a few days of this practice, try to read short sentences, then longer ones, without at first being particularly concerned about the breath. Read, however, loudly and distinctly, and as soon as the breath is used up, inhale again in the manner described. At first a new breath should be taken after each short sentence. You will soon find that it is very simple and easy; that you do not need to "save your breath" as some advise. This deep inhaling should be practiced often, but not long at a time. Reading and speaking while correctly inhaling should be practiced daily, but it is too soon to try singing; other lessons must first be mastered by the singer.

NERVOUSNESS CAUSED BY BREATHING POORLY

Many persons, especially singers and speakers, experience a nervous, uneasy feeling of weakness; their chest falls or sinks together, they have no breath, and they feel a stuffy, tight sensation, particularly in the stomach region. From this they conclude that they have a weak breath and that this causes their weak voice. Really, the reverse is true. One breathes badly because one speaks badly. When the muscles of the tongue, which control the vocal chords, are too weak, then the vocal chords cannot close the air tubes enough to prevent the escape of air. Therefore, all those whose voices are weak, husky or thin, should by all means study my method, which will enable them to gain not only an ordinary good voice, but an unusually fine one, if they persevere.

Some people have naturally good voices, and yet their breathing, and consequently their speech, is poor. Heart trouble, lung diseases, and even tumors, according to Dr. Nagel, who has contributed the most minute researches pertaining to such diseases, may be caused by poor breathing.

BREATH RESISTANCE

(1) Seat yourself comfortably and with your handkerchief take hold of your nose and close it slightly, then force air through the nose, at first lightly, and then more sharply. Lay your other hand flat upon your stomach at the waistline and blow through the nose three times, pausing a second or so between each blowing. Repeat as before, lightly at first, then with more strength.

Now observe that when blowing (of course using the handkerchief), the stomach jerks a little, but that it does not move either outwardly or inwardly. One feels the contraction in the stomach, just as if one were squeezing a heavy rubber ball in the hand. When blowing, always remember that it is this slight contraction which you feel, that drives the breath to the nose. Continue this exercise until you have learned how little motion is necessary. Become familiar with this motion.

BREATH WITH SOUND

(2) After you have mastered the above exercise and can mentally see the slight, though somewhat sudden motion of the outer abdominal muscle, make this motion intentionally and call out three times in a natural tone "ah." Then, also, three times, "ha." By laying one hand over the stomach and the other upon the chest, you will observe as you call "ah" or "ha" that the chest

also moves or jerks a little. These jerks indicate that the vocal chords were closed. If they had not been closed, the stomach and chest would have sunk deeply. This exercise should for the present be made only a few times during the day, the purpose of it being to teach you the functions of the breathing organs. After a few days you should attempt to speak short sentences; later, longer ones. Study the following reading first; later, select anything you please—your daily paper, etc.

(3) At first speak the sentences in a hasty, careless way, then with the second or third repetition try to whisper in a rather high pitch and if neither the chest or the stomach move noticeably, you will observe that almost no breath is used. If, on the contrary, there is a good deal of motion, you must endeavor to whisper still higher, much as if you were trying to speak in the head. Finally, remember that only the **slightest** motion of the stomach is necessary to bring out a big, full tone.

Therefore, now speak the sentence as if you were speaking to a friend across the street, that is, in a raised tone of voice, but without the least strain. Do that at first quickly and without expression, and later in a rhetorical style.

This will demonstrate that with this slight motion of the stomach one can speak short and long sentences loudly and without strain.

The breathing exercises do not need a regular routine. The main thing to learn is to let the chest and stomach muscles do their work naturally. A little attention each day for a few weeks will correct your breathing. Read:

"I am the resurrection and the life; he that believeth in me, though he were dead, yet shall he live; and whosoever liveth and believeth in me shall never die."

"Adams and Jefferson." *Edward Everett.*

"No, fellow-citizens, we dismiss not Adams and Jefferson to the chambers of forgetfulness and death. What we admired, and prized, and venerated in them can **never** die; nor dying, be forgotten. I had almost said they are now beginning to live—to live that life of unimpaired influence, of unclouded fame, of unmingled happiness, for which their talents and services were destined. They were of the select few, the least portion of whose life dwells in their physical existence; whose hearts have watched while their senses slept; whose souls have grown up into a higher being; whose pleasure is to be useful; whose wealth is an unblemished reputation; who respire the breath of honorable fame; who have deliberately and consciously put what is called life to hazard, that they may live in the hearts of those who come after. Such men do not, can not, **die.**

"To be cold, and motionless, and breathless; to feel not and speak not: this is not the end of existence to the men who have breathed their spirits into the institutions of their country; who have stamped their characters on the pillars of the age; who have poured their heart's blood into the channels of the public prosperity. Tell me, ye who tread the sods of yon sacred height: is Warren dead? Can you not still see him, not pale and prostrate, the blood of his gallant heart pouring out of his ghastly wound, but moving resplendent over the field of honor, with the rose of heaven upon his cheek, and the fire of liberty in his eye?

"Tell me, ye who make your pious pilgrimage to the shades of Vernon: is Washington indeed shut up in that cold and narrow house? That which made these men, and men like these, cannot die. The hand that traced the charter of independence is, indeed, motionless; the eloquent lips that sustained it are hushed; but the lofty spirits that conceived, resolved, matured, maintained it,

and which alone, to such men, "make it life to live," **these** can not expire.

"These shall resist the empire of decay,
When time is o'er, and worlds have passed away.
Cold in the dust the perished heart may lie,
But that which warmed it once can never die."

NOSE—INHALING

In the ordinary, daily vocations of life, it is best to inhale through the nose. Also during the longer rests in singing, the nose breath is advisable, though for short rests the mouth must necessarily remain open, as there is not time sufficient to close the mouth, inhale, and open the mouth again.

For public speaking, the nose inhaling will usually be the most resorted to. Care must be taken not to make any noise in inhaling, because this would not only sound badly, but if there is any noise, it proves that the air passage is not entirely open while inhaling, and has to be forced.

If the upper chest is relaxed at the instant of inhaling, and especially if you allow the head to bend, to droop very slightly forward at the same time, and in this relaxed state suddenly expand the lower back as taught, no sound can be heard. The drooping of the head and chest will, after a little practice, be so slight that it would be merely a graceful movement and so add to your appearance before an audience. The whole effort of inhaling should become a graceful, sinuous motion. Remember always that the muscles do not move more than the merest fraction of an inch, therefore, any perceptible motion is likely to be overdone. Always think of opening the shoulder blade doors, but in the loosest, softest manner. Accustom yourself to this thought.

The shoulder blades open in inhaling: that is, they move slightly apart, like a double door, and close again as the chest resumes its natural position, thereby expelling the breath.

These two lessons are, of course, not complete; they are to teach you to take breath—to inhale. The next lesson will teach you about exhaling. Only when inhaling and exhaling are complete, will you know the entire system of breathing.

For the present, do only as best you can; you are far enough advanced now, even in breathing, to give you a very good control over the breath, even without the exhaling lessons.

In the lessons on breathing, as in the many lessons on voice, only fragments can be given in any one lesson at one time. The process here, as in the voice, is step by step, so have patience now until the entire breathing system is unfolded.

Expiration begins with the next lesson.

EXAMINATION QUESTIONS ON LESSON XXVIII

1. Should chest and abdomen be entirely relaxed for breathing?
2. Should chest and abdomen be contracted or stiff for breathing?
3. What is the correct conditon of the muscles for breathing?
4. From what exact point is the chest expanded?
5. Does your chest expand in front as well as in the back?
6. What is inspiration?
7. What is expiration?
8. Can you inhale with ease?
9. Is your throat loose when inhaling?
10. Do you inhale through nose or mouth?

LESSON XXIX

PERFECT BREATHING—(*Continued*)

EXPIRATION

It must be clear to all of my students by this time that it was necessary to go somewhat deeply into all the subjects related to voice. Each lesson had to be preceded by a "theoretical discussion" in order to show you why the old systems of haphazard, unscientific, hit-or-miss ways of teaching voice culture, have failed.

It was further necessary to explain that a really valuable system of voice can only be established upon facts. Of course it was necessary to show you these facts, hence all the technical discussions in physiology, physics, vocal mechanics, etc.

All these discussions were necessary; first, to arouse your interest, and second, to insure your confidence in my ability, for your confidence I felt was absolutely necessary to assure success. The exercises which will develop your voice demand of you great patience and perseverance, and this I felt could only come through a firm belief in my method and confidence in my ability and conscientious sincerity.

It would have been easy merely to give you my exercises and let it go at that, leaving the responsibility of practice to you. It was comparatively easy merely to write the exercises. My study and experience enabled me to state them without undue effort. But it is quite different to know a thing yourself and to explain that thing to others, so clearly that it will be as plain to them as it is to yourself. Great care, exhaus-

tive research, and self-restraint must be exercised to teach any subject successfully. This is even more difficult with the subject of voice, because those who formerly studied voice without success were naturally prejudiced against any new method. Those who had never studied voice believed the subject an easy one, requiring only certain few exercises, instead of a long continued and somewhat arduous course of study.

The fact of the matter is, the study of voice is a part of a general education, because so many subjects are involved.

If the human body were an inanimate machine, like a watch or a music box, it would be easy enough to replace the defective parts so that the machine would run smoothly; but in the human body this is not possible, nor can you go to a physician or a surgeon and ask him to do the repairing. Quite the contrary, you must be your own mechanic, your own physician and surgeon; there is no other way.

To make it possible for you to do that for yourself which no one else can do, it was necessary to educate and to train you in this particular line.

In the lessons on breathing, so far studied, you must now see why in former lessons I gave you merely general directions in regard to breathing. I had to proceed in a systematic way and could not interrupt the lessons to explain the matter of breathing scientifically exact as I am doing now. Nor was it necessary to break into the former lessons, because, important as is the matter of breathing in itself, yet it is secondary. It is perfectly possible to have a good speaking and singing voice in spite of incorrect breathing.

I am well aware of the fact that this is a schismatic statement, entirely opposed to many teachers who be-

lieve and teach that breath control is the most, if not the all-important factor in voice.

I cannot claim originality for this statement. The old masters also placed breathing in the second position. Most of them ignored the subject entirely, relying on the fact that because their students were living they also had sufficient breath to support life and hence voice.

After all is said and done about breathing, the fact remains that we do not need great volumes of air, but merely a sufficient quantity of oxygen to support life, to help the process of combustion; to feed the fires needed for the purpose of movement, work, and repair. Even in singing, a great volume of air is rather a hindrance than a help. The fellow who can blow himself up like a toad is merely straining his chest muscles uselessly. Personally, I would undertake to out-distance any one of the breathing specialists in either talking or walking, and I would merely use the ordinary breathing.

By taking frequent breaths before and during the contest, I would store up more oxygen than the man who expands his chest like a balloon every time he takes a breath. Goliath very likely could have defeated another "beefy" giant, but he fell before the little David. Brute force cannot stand against knowledge, and knowledge is an accumulation of many seemingly little things. To be sure, we are told in fairy tales that the giants were grinding their own corn with the help of windmills, and that when there was no wind they stopped up one of the openings of the nose and blew through the other, thereby turning the windmill, but the author concludes by saying, "If you don't want to believe it you must pay a dollar."

Authors and teachers of the sixteenth and seventeenth centuries taught that in regard to breathing, the flute was the best illustration. Only a medium breath should be used. Only for more intensive expression should breath be forced, just as a player on the flute will use greater breath pressure to increase the tone power for certain passages.

Rosettus says: "Lightly and without anxiety should the breath be taken during pauses. He who understands to renew the breath skillfully, sings with ease."

Bovicelli says: "One should inhale without noise, so as not to affect the ear of the listener. There are many who arouse more curiosity with their breath than with their voice. They take too much breath, they sing too long on one breath, and at the last they have not sufficient strength to conclude without a 'smacking' sound."

Cerone says: "It is not good when singers take a breath to each short note, like a nervous horse who shies at every shadow."

Caccini says: "The breath should always be ready when needed—it should be used sparingly."

Donati advises to open the mouth only half, as a means of good breath control.

I have before cited Signore Mancini, who is looked upon as the foremost authority of the old Italian methods. I shall quote what he says in the "Art of Singing," published in 1777:

"The multitudes believe that one who has an elevated chest and a well developed thorax, and can make lots of noise, has the essentials to become a good singer. The strength of voice depends, it is true, upon the quantity of air and the velocity with which it is expelled from the lungs: thus, the wider the chest the larger the

'aspra arteria' and the larynx. All these qualities combined create greater strength of voice, which is produced from the air bursting forth from the cavity of the thorax.

"In the opinion of physiologists, the lungs are the instruments which aid in speaking and in singing with more or less force, according to the degree of expansion of the lungs and chest, and their ability to expel the inhaled air. But, then, it is also their opinion that the lungs are not the real organs which form the voice in the throat. The voice forms itself in the mouth by the flux created by the air in passing through the vocal organs in the act of inspiration and expiration. The air from the lungs acts upon the larynx in singing, just as it acts upon the head of a flute that is leaned to the lips for playing.

"The lungs are not the actual organs of the voice; they merely furnish the fuel—the air; the real organs of the voice are: larynx, glottis, uvula, tongue, palate muscles, arches, hard palate, and lips. These organs are the means by which the voice is given its diverse modulations, so that the better developed they are the more perfect, strong, and clear the voice will be. The voice, so to speak, suspends itself in descending from the highest to the lowest tones, and runs diverse modulations according to the varied manner in which the air is compressed by the larynx.

"In speaking, these organs are quiet at intervals, but when used for singing they are in a state of continual action and excitement; the muscles of the larynx carry the greatest burden, as these are the organs which direct the voice. These muscles contract strongly in the higher tones and relax in the lower ones."

From these quotations it can readily be seen that the old masters had only a very hazy idea about breath-

ing. No especial system was established; each teacher simply followed his own inclination.

In the last forty or fifty years, however, many systems of breathing were advocated, some of them being fairly accurate, but none of them so far as has come to my notice, have been systematized into a scientifically correct and practically feasible method.

For a systematic process of study, the division of inhaling and exhaling had to be resorted to. In the preceding two lessons the former was taught—now you will learn the more important step of exhaling.

EXPIRATION
THE DIAPHRAGM

In the introductory remarks in the lessons on Perfect Breath, it was said that the **normally** most important factor of active inspiration is the diaphragm. In normal breathing, as we go about our business, as well as for ordinary conversation in a low, quiet pitch, only a little breath is inhaled and that inhalation is caused by the diaphragm almost entirely, without any activity of the rib expanding muscles.

The dome of the diaphragm descends and thus creates a vacuum which permits the lungs to expand (mostly downward) and store up the breath which has filled the vacuum.

But for the public singer, the speaker, and for all purposes which necessitate more than the normal breath, for running, dancing, etc., the rib expanding or chest enlarging muscles are the most important, while now for this unusual, extra breath, the diaphragm's principal activity is expiration. When the diaphragm descends, its action is inspiratory, but when it ascends, it becomes expiratory, because it then urges

or pushes the air outward. The diaphragm has, therefore, a double capacity.

The diaphragm forms a partition between the chest and the abdomen. It is shaped like a cupola or dome which extends far upward into the thorax or chest. It is attached to the vertebrae, the ribs and the lower part of the breast bone. See Fig. 152, also Fig. 147 in Lesson XXVII.

If you will feel the place where the lowest rib joins the backbone and then draw the hand all around the lower edge of the ribs, you will be pressing against the lower borders of the diaphragm. From this border the diaphragm rises on each side inside of the chest.

If the fibres of the diaphragm contract involuntarily, the central position will necessarily descend; in this case the free ribs will be drawn inward, unless the ribs are otherwise held expanded or rigid; in sudden inspiration as in violent sobbing, this is always the case. But under no circumstances can the diaphragm expand the ribs as is sometimes taught; quite the reverse is true.

The diaphragm may be compared to the head of a drum, which is the sounding part or skin, and the ribs, the wooden hoops which stretch the skin.

As long as the skin on the drum is in a loose state it sags downward, but when the hoops to which the skin is fastened are being tightened, the skin is being straightened and stretched and in this way the drum is tuned in harmony with the orchestra.

Or, a lady's fancywork is stretched more or less tight as the hoops around which the cloth is fastened are made tighter.

In a similar way the diaphragm is fastened to the ribs of the chest, and the more these ribs, are expanded so much more is the diaphragm straightened and

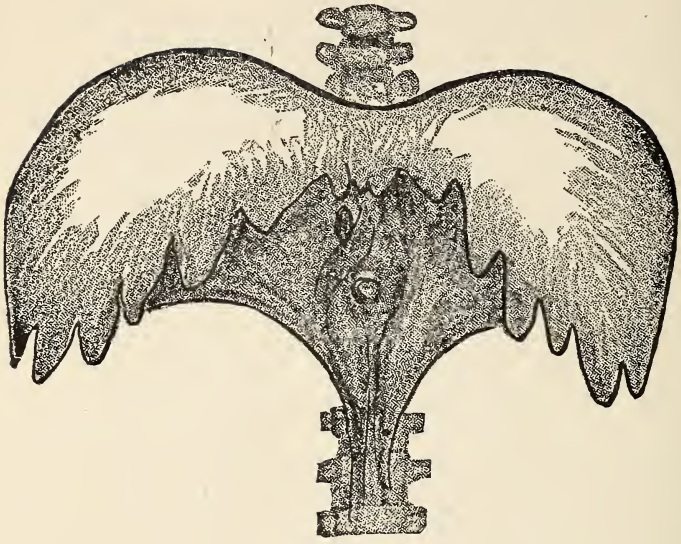


Fig. 152

The diaphragm viewed from in front, showing its jagged border or serrations, by which it is fastened to the ribs.

tightened. To the contrary, when the ribs are loosened they resume their natural closed position, then the diaphragm is also loosened and resumes its dome shape in the chest.

The diaphragm is pierced by three tubes. First, the aorta, which conducts the blood **from** the heart; second, the vena cava, which leads the blood **to** the heart; third, the aesophagus, through which food passes into the stomach. The vena cava passes through the diaphragm near the spine and if the diaphragm is voluntarily contracted, as some try to do, it prevents the natural, free flow of blood to the heart, which causes dizziness and sometimes nausea. From all this it is apparent that the diaphragm should never be contracted voluntarily or by direct force.

THE NEED OF A POWERFUL COMPRESSION

The degree of pressure of the air in the lungs and windpipe against the under side of the vocal chords is controlled by the ribs and the diaphragm.

According to the measurements of French scientists, the breath pressure of **ordinary** expiration amounts to approximately a little over one inch, but when a tone is sung between A in the second space and E in the fourth space, the pressure suddenly rises to seven or eight inches; when the tone is sung loudly, the pressure rises to over three feet, and for high tones, sung fortissimo, the pressure would be still greater.

It was explained previously that the vocal chords can be reinforced—that they can be enlarged by the muscles which lie close to them and that the more the chords are enlarged the stronger and more beautiful will the tone be.

Now, a powerful breath pressure will greatly favor this enlargement of the vocal chords. The augmented effort brings the entire vocal organ into a firmer state, which again reinforces the vibrations, and of course creates additional over-tones, thereby making the quality of the tone still finer, nobler, and sweeter.

EXERCISES TO LESSON XXIX

COMPLETE RELAXATION OF THE EXPANDING MUSCLES

In the early part of this course, it was taught why the thorax had to be expanded, and the principal muscles with which this is done were described. Now, as long as the thorax is thus held expanded, no breath can escape and no tone can be produced unless it is forced. In order that the breath can be used for the formation of tone or speech, the expanding muscles have to be

relaxed. Only then can the thorax resume its normal shape.

The relaxation of these expanding muscles must be sudden, free, and easy. In other words, the entire thorax must seem to fall together—to collapse. For the singer, this complete relaxation of the expanding muscles is indispensable in gaining the gentle attack to begin tones and phrases.

(1) Sit in a straight backed chair, so far back that you are in contact with the back of the chair. Do not take an extra deep breath—just your usual breathing should be kept up. Mentally picture, think of the lowest rib in front, and determine that this lower rib suddenly and loosely caves in, gives way, while at the same time you breathe out a "ha" breath, or rather the caving in causes this "ha" breath. Notice that the chest has sunken inward, that you feel hollow and loose all the way down to the pit of the stomach, and, lastly, that your lower back leans stronger than before against the back of the chair. Of course, the upper chest droops loosely downward.

(2) Inhale your usual breath and hold it while you mentally count "one" "two." Notice that now you feel conscious of holding the chest, not exactly as a strain, but as a little exertion. At count "three," suddenly cave in from the lowest rib and notice a feeling of relief—of comfortable ease. Of course, let the "ha" breath escape at the instant of collapse.

(3) Take a book in your hand. Hold the arm with the book straight before you. Notice that you are exerting your own will and thus compel the muscles to hold the arm. Count "one," "two;" at "three," suddenly drop the arm and let the book fall out of your hand in complete lassitude, as if exhausted by the effort of holding it. Notice the feeling of utter relaxa-

tion in the arm after you have done this illustrating exercise ten or fifteen times. Try to gain this utter relaxation as you collapse the chest with the "ha" breath.

(4) As was taught in Lesson XXVII, expand the thorax or chest. Notice that now you have added greatly to your breath. Hold this expanded position while you mentally count "one," "two," but at "three," collapse completely, loosely. Now notice that the chest resumes its upright position and that the back leaves the chair. Prove it by inserting your hand between back and chair; repeat above exercise. Practice this for two weeks, several times a day. Make a regular routine of it. At count "one" expand; at count "two" hold still; at count "three" collapse. Later on expand at "one," collapse at "two." Still later, count each day a little more between expansion and collapse, until you can count twenty. If you feel a strain at any count, collapse that instant.

(5) Having accustomed yourself to this collapse, sing a tune, later on phrases, or speak sentences. At the instant of collapse, notice that gradually you can sing longer phrases or speak longer sentences, before you need to expand or take in new breath; also, that the singing or speaking tones are full and strong, and that you feel free of any constraint. An illustration will make this still more clear:

"'Tis the last—rose of summer,—left blooming—alone;

All her lovely—companions,—are faded—and gone;"

Let the singer expand for a new breath first at each dash, later only after each comma. Or, sing five tones up, expand again and sing five tones down. Later sing up and down on the one breath. Collapse. Still later sing an entire scale up and down, but never go as far as to feel any strain.

Similarly the speaker should use short sentences and gradually longer ones, at first without emphasis or expression, but later speaking with great emphasis and earnestness. Always stop before a straining or tight feeling, which is caused by the lack of breath; the muscles having nothing now to compress, they are being overstrained, overworked, hence the feeling of discomfort.

EXAMINATION QUESTIONS ON LESSON XXIX

1. What is inspiration?
2. What is expiration?
3. What is the diaphragm?
4. Where is the diaphragm attached?
5. Is the diaphragm used both for inhaling and exhaling?
6. Can you relax the expanding muscles?
7. In what way is the blood circulation affected by wrong breathing?
8. How long each day do you practice the thumb under the tongue?
9. Do you feel the "beat" of the tongue against the little finger distinctly now?
10. Have you succeeded with "Perfect Breathing" so far?

LESSON XXX

PERFECT BREATHING—(*Concluded*)

THE BREATH, THE BEAT, THE SOUND

A great many teachers and most people who have studied something about breathing, confound breath-**taking** movements with breath-**expelling** efforts. Advice for the former is often applied for the latter; it being implied that the chest or abdomen should be held firmly in the position given them by inspiratory effort.

Far from this, the rule is an exactly and positively opposite one you must relax all inspiratory muscles at the instant that breath is expelled and voice begins.

The notion that there is a contest between the two sets of muscles is a foolish one. Indeed, the downward and inward fall, or collapse of the expanded thorax, is but slight after proper breath-taking; this even assists in starting the tone. That the collapse can give no unpleasant shock, even in mild delivery, may be proved by filling the chest full of breath and singing "ah" at the instant of collapse. It will be found that a positive and voluntary expiratory effort must be added to secure quality and adequate power.

The inspiratory or breath-taking effort must be separated from the expiratory or breath-expelling efforts. They must be practiced till the one can be followed by the other in quick succession.

EXPIRATION

THE ABDOMINAL MUSCLES

The expiration of the chest expanding muscles as taught in the last lesson is an **involuntary** effort of

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expiration. To it must be added a **voluntary** effort for the powerful tones demanded in public speaking or singing. The voluntary effort must be made by the abdominal muscles alone, and by no others.

The purpose of the abdominal muscle is simple, because its principal object is to narrow the abdominal cavity. But several of these muscles also assist in the movement of the body downward or sidewise, and especially in the efforts of strong expiration.

The muscles of the abdomen run in three different directions: downward, across, and slanting. They support the viscera, or contents of the body, and they can act upon this in a steady compressing effort. See Figs. 153, 154, and 155. The viscera is enclosed by these abdominal muscles in front and on the sides, and by the diaphragm above.

When the abdominal muscles contract, they push the viscera backward toward the spine and upward against the diaphragm; in this wise the diaphragm is being pushed upward against the lungs and assists to expel breath. But if the diaphragm were held tight, then the viscera could not push it upward and would itself become strained, because it would then have too little room to spread. Such straining, it is claimed, is the cause of many internal diseases. Weak and relaxed abdominal muscles are also a great disease contributing agent, such as a suspended abdomen. If the abdominal muscles are weak, they cannot hold the viscera in place, in consequence of which the abdominal contents hang downward. For these reasons, aside from the beneficial results in the voluntary breathing effort, the exercises which follow these explanations will contribute to a better condition of health, especially for older people.

In Fig. 148, the "Complete Breathing Apparatus," only one of the principal abdominal muscles could be given—the obliquus externus—but the student can easily picture for himself how the other muscles are situated, especially with the help of the Figs. 153 and 154.

The above-mentioned obliquus **externus** starts on each side of the abdomen from out of the last eight ribs and runs to the hip bone below. See Fig. 153. In con-

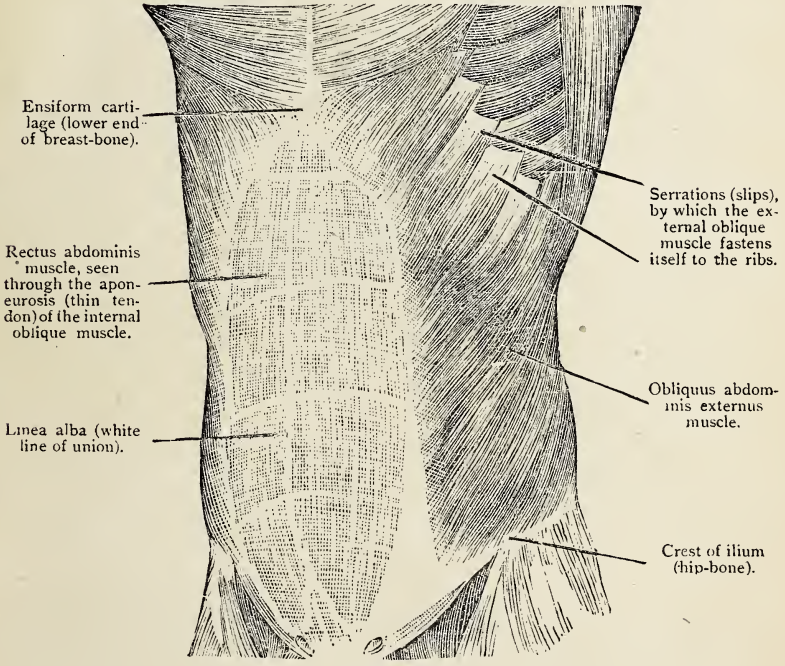
Ensiform cartilage (lower end of breast-bone).
Rectus abdominis muscle, seen through the aponeurosis (thin tendon) of the internal oblique muscle.
Linea alba (white line of union).
Serrations (slips), by which the external oblique muscle fastens itself to the ribs.
Obliquus abdominis externus muscle.
Crest of ilium (hip-bone).

Fig. 153

traction it will draw its curve to a straight line, pushing inward against the diaphragm; at the same time it will help to narrow the lower chest and thus assist in compressing the lungs to expel breath.

The obliquus **internus** lies below the obliquus externus. Its fibres cross that muscle and extend in a

fan-shape into the last three ribs, pulling these downward and somewhat inward. See Fig. 154.

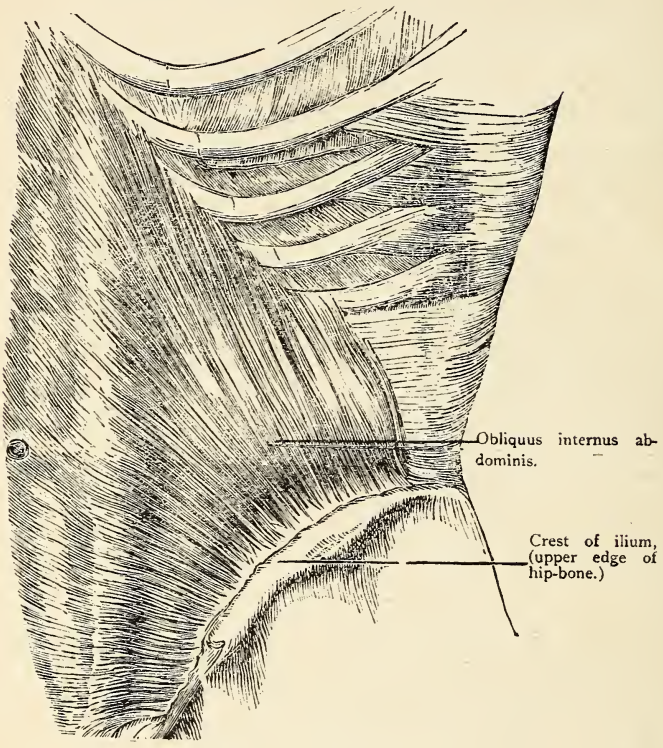

Fig. 154

The transversalis abdominis extends straight across the abdomen, not slanting as do the two preceding muscles. It is the deepest of all the abdominal muscles. It is attached to the six last ribs in front, to some of the vertebraes in the back and to the hip bone below. This muscle will draw the whole front of the abdomen inward, thereby pushing upward against the diaphragm, and inward and downward against the ribs to which it is attached. See Fig. 155.

There are several minor muscles, which assist in the abdominal and rib movement, but those given are the

principal agents which need to be known, as the control of these muscles will necessarily involve the minor muscles also.

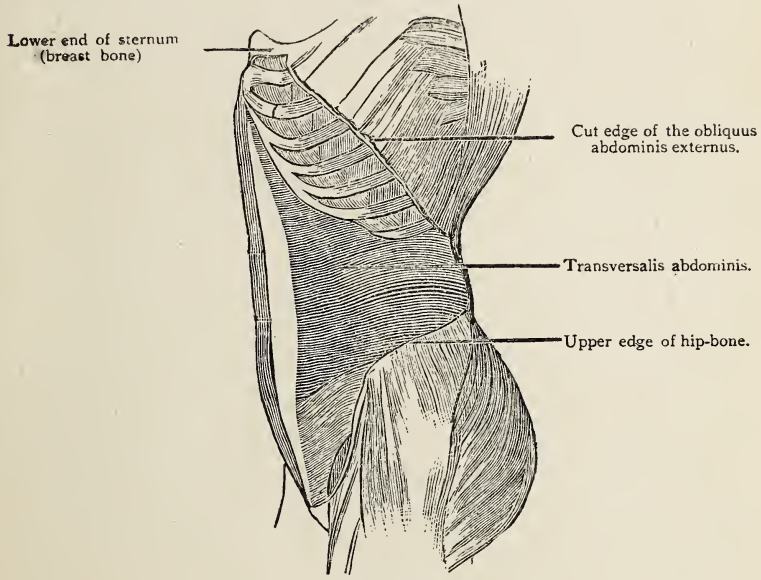
Lower end of sternum (breast bone)
Cut edge of the obliquus abdominis externus.
Transversalis abdominis.
Upper edge of hip-bone.

Fig. 155
View of the Transversalis Muscle

GENERAL SUMMARY

Inspiration for ordinary conversation requires only a slight expansion of the lungs, and the diaphragm contracts very little and gently.

Inspiration for public speaking or public singing, concert or opera, requires an extensive expansion of the lungs and ribs.

Expiration for ordinary purposes is so slight that it needs no special attention.

Expiration for public use requires an extensive rib, diaphragm, and abdominal movement, to compress the lungs sufficiently to set the enlarged and tense vocal chords into vibration without any seeming effort; that is, the entire effort must become automatic.

HIPS, LEGS, ETC.

As a further illustration of the interdependence of the muscles of the different parts of the body to one another, the student is requested to examine Fig. 148, Nos. 9 and 10, of Perfect Breath Apparatus, which are some of the muscles connecting the hips with the legs. From the legs there are other chains of muscles to the knee, from there to the foot, and thence to the toes. All these muscles connect in some form with one another, so that if one muscle is injured, that injury communicates itself to some extent all through the chain of muscles of which the injured muscle is a member.

From the head above to the feet below, in front, back, and the sides of the body, run continuous chains of muscles which must work in unison to produce that harmonious working of the body, which is so graceful, so strong, and so beautiful, illustrating in our body the laws of God, viz.: Order—Nature, Harmony—Love, Expression—the Word (Voice).

In the "Perfect Voice" and now in "Perfect Breathing" two systems have been proven and taught, which will enable one to be in perfect harmony with Nature, on these subjects at least.

EXERCISES FOR LESSON XXX

THE ABDOMINAL MUSCLES

The great difficulty in learning correct breathing is not in knowing how much breath to take or how to inhale or exhale, but to obtain a sure control over the important abdominal muscles without the interference of the diaphragm, rib, or chest muscles. It is true that the diaphragm plays an important part in exhaling, but it can be controlled only indirectly through the abdominal muscles. For all tones, for the strongest and high-

est as well as for the softest, only a nominal contraction of the abdominal muscles should take place, assisted by a slight sinking of the lower parts of the back.

(1) Cough a few times, then cease suddenly, and you will observe a large but loose forward movement of the stomach. Cough again and observe that without wishing it, or intending to cause it, the lower ribs contract somewhat. Now place your hand against the lowest part of the abdomen and draw that part loosely and easily inward.

You will find that the entire adbomen goes with it. Next, simply **think** of drawing in the lowest part of the abdomen and observe that the chest is also drawn in slightly, although you did not think of the chest at all. You see, the chest motion results from the abdominal motion.

In doing this exercise, sit comfortably, leaning lightly against the back of the chair. Now pause a few seconds between each exercise and picture to yourself the abdomen as an empty hollow space against which the muscles suddenly but quite loosely contract. Then shape the lips for a soft "s" or "z" and repeat the exercise as before and observe that the "s" is involuntarily heard in a low, soft hiss.

This is proof that your abdominal muscles are acting properly. The deeper and more loosely you can move the abdomen, the softer will be the "hiss" sound,

Notice also that the chest feels hollow and relaxed. You must learn to make these motions a little faster each day, but always loosely. Devote about five minutes to the exercise and repeat several times a day.

(2) **Diaphragm Isolated:** Hold a hand against the lower abdomen and make the "s" sound suddenly but softly, this time without the least abdominal motion. In fact, do not even **think** of the abdomen. If

you will hold the upper body (the chest) quite relaxed, you will experience a sinking sensation in the under portion of the chest, right over the stomach, as though something had caved in. This is the diaphragm.

Now hold the upper body quite relaxed and make a prolonged, low, soft, breathy "s," and observe that the entire upper body sinks, much as it would collapse if you sank onto a chair in extreme weariness. In this exercise the abdominal muscles were excluded as much as possible and only the diaphragm isolated.

(3) **Abdominal Muscles and Diaphragm:** Move the abdomen twice suddenly but loosely backward, as in the first exercise and observe that when made loosely enough, only a soft "s" results. Then, as the second exercise, aspirate the "s" without abdominal motion and with the upper body quite relaxed. Next unite the abdomen and diaphragm exercises by suddenly and loosely drawing in the abdomen and at the same time expect the feeling of sinking or falling in the lower chest. Hold the position of the mouth as before, and notice that now you have a sharp hissing "ss." This is a proof that all the breathing muscles have contracted powerfully and without the least strain. Later, when this exercise can be performed with ease, instead of the "ss" call out "ha, ha, ha, hi, hi, hi." Later still, read or speak aloud short sentences and observe that the abdomen and chest seem loose, that the breath flows easily and suffices for long sentences.

These exercises must be practiced until they become automatic. From time to time, go over these lessons and again review all the exercises given to see if you have mastered them.

THE ABDOMINAL MUSCLES

(Continued)

(1) Place both hands against the sides of the lower chest. Inhale and observe that the chest opens and expands outward against the hands. The expansion of the chest causes the inrush of air, therefore the "inhaling process" is really only a process of quickly, loosely expanding the chest.

Hold the chest in this expanded position during the following exercise, which will at first seem a little difficult.

Very gently and loosely draw the lower abdomen back. Hold it so for a moment, then relax, slacken it so that it falls back into its natural position. In doing this exercise you will observe that the abdomen narrows a little from side to side and flattens in front. Familiarize yourself with this movement and then observe that in the drawing in and slacking of the abdomen, the sides of the chest are not to be moved at all. Place your hands against the sides of the lower chest, draw in the abdomen very, very loosely, and determine that the chest should not move in the least when you draw the abdomen backward.

This is the **important** part of this exercise. When you can thus draw and relax the abdomen without moving the chest you have completely isolated the important abdominal muscles and made a great advance.

ISOLATED ABDOMEN

(2) Whisper "sh" several times. Observe the position of the mouth and tongue and retain the position unconstrained. Then place the hands on the sides of the chest, as instructed above, and quite gently but quickly draw back the abdomen and involuntarily a faint "sh" will be heard. During this exercise the chest

and sides must not move at all. The greatest movement of the abdominal muscles will be noticed at the lower end. Do the same with the whistle. Close your lips around the mouth of the whistle. Keep your throat free and make a sound merely by the loose abdominal contraction without moving the ribs.

ISOLATED CHEST

(3) Sit comfortably with the back resting against the chair. Take a deep breath. Hold it for a moment and then whisper "sh" softly and observe that very little breath is used. Then quickly follow the "sh" with "oo" and note that the chest sinks at once and that all the breath is used; the sound is like "sh-oe."

This exercise should be gone through many times without taking notice of the abdominal muscles. The student is to observe two points in this exercise. First, that in the "sh" a resistance is formed principally by the tongue, which lets very little air pass out. Second, that in the transition from the "sh" to the "oo" this resistance disappears; the breath escapes quickly and the whole chest sinks. Incidentally, this exercise shows that the breath is easily lost where it meets no resistance.

The voice student must now see that if he loses his breath easily it is because his vocal chords do not close the air passage as they should. He should not aim to hold the breath, as it is sometimes but erroneously taught, but he must see to it that the vocal chord-stretching muscles are strong enough to close the air passage and stretch the chords automatically. If you try to hold your breath you will invariably force the voice and get into the habit of using the glottis attack.

TONE WITH ISOLATED ABDOMINAL MUSCLES

(4) First, clearly understand and master the first exercise in this lesson. Then place the hands against the sides of the lower chest. Expand the chest and inhale. Hold this expanded position quietly for a moment, then whisper "awh," "ah," "eeh," "oh," "ooh." With each vowel draw in the abdomen quickly but gently, as in the first exercise. Form the vowels in the usual way. Observe the position of the tongue, mouth, and teeth, made by each vowel, then hold each position exactly, one at a time, and draw the abdomen back. In doing this you will reproduce each of the vowel sounds involuntarily. During this exercise the chest must neither expand nor contract.

The vowels must be quickly forced out by the slight movement of the abdomen; then pause a moment before the next vowel, so that the abdomen may relax. During the relaxation a little breath is lost—noticeably as an aspirate, therefore, I have added the final "h" to the vowels.

After systematically and quietly practicing the above exercise, follow the same procedure, but now speak, or rather, call out the vowels loudly, but never scream them. Almost everyone will attain a considerably better and easier tone through this exercise. Always think of the breath and the vocal strength as resulting from a slight contraction of the abdominal muscles. Experiment also with whistle.

PLEASE OBSERVE

That the isolation of the abdominal muscles may cause some difficulty at first, but persist in a little **daily** exercise until you have mastered it. If you have mastered the previous instructions you can be sure of mas-

tering these. By isolating the abdominal muscles you will get the tone away from the throat, and you will also learn much of value about the breathing muscles. Practice this isolating exercise often. Even after you have gained control of these muscles, it will be well to go through these exercises again once or twice a year to make sure you have the muscles under your control.

CHEST AND ABDOMEN COMBINED

(5) Make the "sh" sound by suddenly but very loosely moving back the abdomen. Do this several times to get a gentle, soft "sh" sound. Let the abdomen simply flatten backward without the least effort, then do the same thing with the chest; that is, first expand, hold a second, then let the chest contract (sink) simply because you let go of the expanding muscles. Notice that you can make the "sh" sound also with the chest alone. Practice this chest exercise a few times, then:

(6) Combine the two movements by suddenly and loosely drawing in the abdomen and at the same instant expect the feeling of sinking or falling in the lower chest. Hold the position of the mouth as before and notice that you now have a sharp hissing "hss," instead of the soft "hs" as before. This is a proof that the breathing muscles have contracted powerfully and without the least strain. Later, when you can perform this exercise with ease, instead of the "hss" call out "ha, he, ho, hoo, haw." Later still, read or speak aloud short sentences and observe that the abdomen and chest seem loose, that the breath flows easily and gradually suffices for long sentences and for the most intense dramatic requirements. This breath must be used for all singing. As you have studied the "Perfect Voice" observe also the tongue beat.

THE BELT

With this lesson you are furnished with the "Belt" or tape measure. Its purpose is principally in assisting you to isolate the abdominal and chest muscles.

As a preliminary exercise fasten the belt around your waist, between the lowest or first rib and the third. Do not close the belt tightly, but just enough so that it does not interfere with your natural, easy and accustomed breathing. Notice the number or size of the closed belt, or, in other words, your "measurement." After this loosen the belt and:

(1) Sitting comfortably in a chair expand the chest. This expansion must not be forced, but easy and loose. Gradually it should be made quick or sudden. Let the upper chest drop or droop loosely downward, when you expand outward, like a lazy school boy drooping over his bench. Repeat this several times to see how loosely and how suddenly you can expand or open out the lower chest, that is, the ribs, and notice the number or measurement on the belt now.

(2) After having learned to expand, **hold** the lower chest in this expanded position and close the belt around it—remember the number.

(3) Now, loosely, but quickly, draw in the lower abdomen, but without moving the chest in the least; that is, retain the chest expansion at the number. The breath will naturally escape, usually both through mouth and nose. Keep mouth slightly open.

This is sometimes a very difficult exercise, but it will pay you to master it, both for greater ease and freedom in breathing and for larger volume in voice.

Besides this, your entire physical being will be largely benefited. You will gain freedom and buoyancy from it. It will relieve strain from any part of the body.

Your walking will be freer and more graceful; you will gain confidence in approaching others.

(4) After you have learned to isolate the abdomen —that is, when you can move the abdomen without moving the expanded chest—then learn the combination of the chest with abdomen in the following way:

Repeat twice, drawing in the abdomen, while chest is extended. The third time let go of the chest in the loosest possible way, at the same instant that you intend to draw in the abdomen, notice now that there is a large, free rush of air; in fact, all the air was expelled now, whereas when you used the abdomen, only comparatively little air was expelled.

You see the abdominal contraction, when the chest is held expanded, only causes the diaphragm to push upward; only a little pressure is in this way acting upon the lungs.

But, when the chest collapses, it adds its own weight in compressing the lungs, squeezing them from all sides, from in front, the back, the right and left side, and the diaphragm from below upward, so the lungs are compelled to give up nearly all the air within them.

TESTS

The following three tests will prove and explain this even better:

(1) Hold the chest expanded and move abdomen, at the same time make the sound "sh," and notice that this sound is soft and not strong, provided you have made the abdominal movement very easy, as it should be, and without moving chest.

(2) Now pay no attention to the abdomen. First expand the chest easily, at the same time inhale. Then collapse the chest in the loosest, easiest way, at the same time make the sound "sh," and notice that the chest

alone also makes the "sh" sound rather softly, though a little stronger, than the same sound with abdomen alone.

(3) Now make the "sh" sound at the instant that you collapse the chest and intend to draw in the abdomen. If you can combine the two in the easiest possible way, you will find that now the "sh" sound is **very** strong, though you have not exerted yourself in the least.

For all breathing exercises leave the mouth slightly open.

Observe after you have succeeded with the isolation of each (the abdomen and chest) that when you use the combination, the chest will sink quite deeply, but the abdomen will hardly move at all, a mere little shrinking is all that you will notice in the abdomen, and this is right.

Finally, when these exercises have been mastered separately, and after you have learned the combination, the breathing will become automatic.

When you sing or speak, always start the voice by intending to let the chest collapse; of course, now it will not sink deeply as in the exercises where you merely do the breathing, because when you sing or speak, the vocal chords are closed and prevent the escape of breath. But, the intention to collapse the chest will relax the expanding muscles and thus give the contracting muscles of the abdomen and diaphragm especially, the chance to contract.

If you would not relax the chest, then the contracting muscles would have no chance to do their work. Also, the collapse of the chest very greatly assists in starting a tone.

There is a contention between the two distinct and different parts, the vocal organ and the breathing organ; through the friction caused by these two parts, the living voice is created.

CONCLUSION

Always inhale by expanding the chest as taught in the earlier parts of these lessons. Make sure that you thoroughly master this.

In ordinary conversation, merely **think** the chest and abdomen as absolutely loose and free. For dramatic efforts, for sudden accented phrases, for strongly accented singing tones, intend to draw in the abdomen at precisely the instant of the accent or at the starting of an especially emphatic sentence.

For especially strong and high tones the singer may even add to his breath support by an effort to suddenly straighten the knees, at the instant of tone. This effort prompts the powerful leg muscles to contract, and as these are attached to the hips, the hips will be strongly held against the powerful upward contraction (upward upon the hips, downward upon the ribs) of the abdominal muscles.

Both the singer and the speaker should aim to use only the tongue and the lips. Avoid the use of the jaw. The mouth should be held no farther apart than the space of the thumb placed sidewise between the teeth. If you put the tryhedron (sent with your first lesson) between your teeth and teach yourself to articulate strongly, slowly, and distinctly, with your teeth apart, you will learn the use of the tongue, and especially your lips, without the tone-destroying jaw movements. The saw-toothed wooden tryhedron furnished with your outfit is intended just for this purpose.

Always hold your body at an easy attitude, just as if you were earnestly, sincerely, speaking with a friend, whom you respect highly, but at the same time feel free and easy; of course, never be slouchy.

If you carefully observe these instructions and practice each exercise until you have mastered it, you have

become master over a considerable part of your body, so that this much at least will be your servant. You should then be a better speaker, singer, and also a sounder, better human being.

A RESTATEMENT OF THE MOST ESSENTIAL LESSONS

The Lessons I, II, VI, XI, and XX, are **indispensable** to any student of voice.

In the first two lessons you are taught the groove; this groove effort compels the hyo-glossi muscles to contract. But the groove alone means little—all good singers and speakers have that automatically, mostly unknown to themselves. But even if they were conscious of the value of the groove, it would not assist them materially to develop their voices further, to increase the compass, the power and ease of the voice.

The groove can be made with the assistance of either the jaw or throat muscles, and when so made, the groove is of no advantage, but rather the opposite.

Lesson VI taught you to make this groove without using the jaw or throat muscles. This constitutes the first great step toward the development of voice.

In Lesson XI you received the instruction how to apply the action of the hyo-glossi muscles in a practical way, by speaking or singing entirely with the all-important action of the tongue. You were given a test which, if you have succeeded in mastering, proved to you without any possibility of contradiction that when you can use the tongue without interference of either the jaw or throat muscles, your natural voice is clear, strong, free and easy. You have the physical proof when you feel the "beat" or slight pressure of the tongue against the underlying finger. Every word

spoken and every tone sung, with which you feel the beat, without throat or jaw interference, is good.

However, up to this point your instructions could go no farther than to introduce you to the necessary work and to give you the needed control over the voice controlling hyo-glossi muscles. You were merely taught how to get hold of and how to use that which Nature had given you long before you ever heard of me or my method.

If you have followed my instructions and practiced speaking with the little finger under the tongue daily, those of you having any speech defects should be almost entirely cured. All that you had to do was to acquire the habit of speaking with the tongue, and when you so speak, you cannot **stammer,** for instance, even if you wanted to stammer.

The public speaker was, with the eleventh lesson, taught the exact and infallible attack. This alone should enable him to speak with ease and comfort, because it gave him the control of all the voice Nature had given him, but no more.

The same applies to the singer. The isolated control over the hyo-glossi muscles enables the singer to use his natural voice to the greatest advantage. His tones are sweeter, stronger, and freer, when this exact attack is applied than it could be otherwise. Many, very many students of this course have written that even with those few lessons, and these only the preliminary lessons, they had succeeded in public appearance as singers, whereas, in spite of years of previous study of the old methods, they had failed.

But to attain the royal voice, the big vocal success, it is necessary to do much more than is possible with the average natural voice, and this can be attained only when these hyo-glossi muscles are made enormously

strong. To train and strengthen these muscles to the uttermost, Lesson XX was given you. Practicing a contraction of these muscles against the resistance of the underlying thumb and without interference of jaw or throat muscles will give you that strength. As it was pointed out in the lessons, this exercise must be practiced very much, and in most cases for a long period.

If your tongue muscles are naturally very weak, then, of course, it may take a very long time to develop all the strength needed. If the muscles are naturally strong, then you will succeed more quickly.

The exercise of **thumb or tongue support under the tongue is the final and only exercise** which must be practiced daily until you are absolutely satisfied with your voice. Practice it **all** you can.

The lessons and exercises outside of the tongue are secondary, designed to gradually give you a complete survey and control over every feature connected with the voice. Once understood, they need not be practiced any longer.

For instance, you were taught the glottis attack for low tones, and the palate attack for high tones and soft tones. As soon as you are sure of those attacks, you need no longer practice them, for there is no development possible or needed. When you once know these two attacks, you can apply them wherever you want to; no further practice is necessary. Only the tongue attack **can** be developed and **should** be developed.

All exercises for breathing given in earlier lessons should be dropped—they were merely for temporary use and to gradually familiarize yourself with the breathing part of your body.

All the lessons of "Perfect Breathing" must be mastered completely. It may take several weeks or months to do that, but it should be done. After you have mas-

tered the lessons and exercises on "Perfect Breathing" you can go no further. It is advisable to review the lessons on breathing every now and then, but it does not necessitate much practice after it is once understood and under your control.

So, finally and for the last time, keep up the practice of strengthening the hyo-glossi muscles; do not be afraid to overwork the tongue, if you eliminate the jaw and throat muscles. No amount of tongue practice can harm you.

A little daily practice of reading, counting, or speaking aloud, with little finger under the tongue, will be of great value to the singer as well as to the speaker; and of course, as often mentioned, this is absolutely, once and for all, necessary for those with **defective** voices of any kind.

This lesson finishes the course in voice training, but it does not mean that I shall no longer advise you. To the contrary, I want you to remember that I shall be glad to hear from you, and especially that I am always ready and willing to assist and advise you.

EXAMINATION QUESTIONS ON LESSON XXX

1. Which part of the body must act **involuntarily** for expiration?
2. Which part of the body must act **voluntarily** for expiration?
3. Do you realize the muscular chain which is employed, both for inhaling and exhaling?
4. Which is the principal part used for **inhaling?**
5. Which is the principal part used for **exhaling?**
6. Can you isolate the abdomen?
7. Can you isolate the chest?
8. Can you realize the combination of using abdomen and chest measure?

9. What is your natural belt measure?

10. What is your measure **after** you have inhaled?

11. What is your success in speaking with the tongue and breath?

12. What is your success in singing with the tongue and breath?

13. Are you willing to develop the tongue strength?

14. Is there any part of the course which you do not understand? If so, what part?

15. Will you let me know from time to time of your progress?

A MANUAL

FOR THE

Study of the Human Voice

EXERCISES AND PRACTICES

FOR

Singing

and

Speaking

PERFECT VOICE INSTITUTE

CHICAGO ILLINOIS

LESSON XI

PHYSIOLOGY OF THE VOCAL ORGAN

(Continued)

ARTERIES AND NERVES

It may seem superfluous to the voice student to be asked to bother about the arteries and nerves of the vocal organ, especially after he has been made to digest a rather complicated description of the anatomical structure of this organ. But merely mechanical things are, after all, useless unless there is a guiding and driving force behind them. Just as merely will power, merely intelligence and merely culture are of themselves helpless, even useless, so is mechanism, even of the most perfect kind, helpless and useless by itself. But the mind, intelligence and culture should work together in absolute harmony and union. They then become invaluable.

The blood and the nerves supply the driving and motive power of the human mechanism. Some knowledge of blood circulation and nerve supply will help to explain the complete action of the vocal organ and the lessons on the breathing organ which are to follow. The seeker after complete truth will also find in the description of blood circulation and nerve supply additional proof of the absolutely unqualified correctness of my method. He will therefore work with greater zest, courage and confidence. He will see that he stands on the solid, unassailable ground of fact. The theory must prove that it is also the fact.

A short time before the outbreak of the war I was present at the launching of one of the mightiest ocean steamships—perhaps the most monumental undertaking of this description in the history of the entire

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world. The mighty ship glided smoothly, gracefully down the slips and soon proceeded under her own steam. Consider that it took perhaps years to construct such a ship and yet there was never any trial on water. This ship, as all others, was constructed by theory—first in the brains of her builders, then the plans were worked out on paper and so on. If the theory was correct the ship would float, if not, then there was some fault, some mistake in the theory. It would be utterly impossible to build a factory, a locomotive or even a fair-sized dwelling without plans—that is, without a theory.

I am taking great pains to explain my theory. I have prepared myself for just this work, have developed the theory and tested it for many years by putting it to actual work and obtaining wonderful results.

Of course work is needed and in some cases long continued work. To encourage you to work I am proving my theory to you, so that you will make it your own and, when you do that, I am convinced that you will be contented to work and, if need be, to wait for the coming of the great success that is sure to follow. Try to follow my theory. Try to understand and master it. You have no idea how much humanity needs just this method. You can help not only yourself but many friends. You can help to make clear what has been misunderstood for centuries.

THE HEART

The blood circulates through tubes (arteries or veins) which grow out of the heart and spread through the body in all directions. Through these tubes the blood again returns to the heart, to be once more

pumped or forced back into the veins and arteries. In this circle of arteries the lungs are included. They are the organs which purify the blood as it comes in contact with the inhaled air (oxygen).

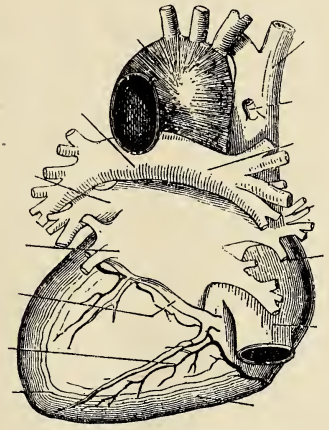

Fig. 71
Heart. Front View

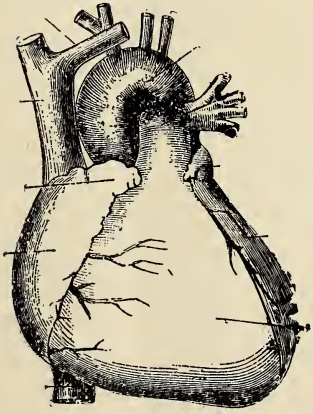

Fig. 72
Heart. Rear View

Figs. 71 and 72 show both front and rear views of the heart in its natural position. The heart is a pear-

shaped organ, composed mainly of muscles. It is divided into two main sections; the right-hand section is called the heart of the lungs, the left-hand section, the heart of the body. Each of these is again divided into a vestibule and chamber.

The heart lies within the chest above the diaphragm and between the lungs. In front it rests against the chest; in the rear it is separated from the spine by the foodpipe and the aorta (the main blood vessel).

THE ARTERIES

As there are two main divisions of the heart, so are there two main systems of arteries; one is the

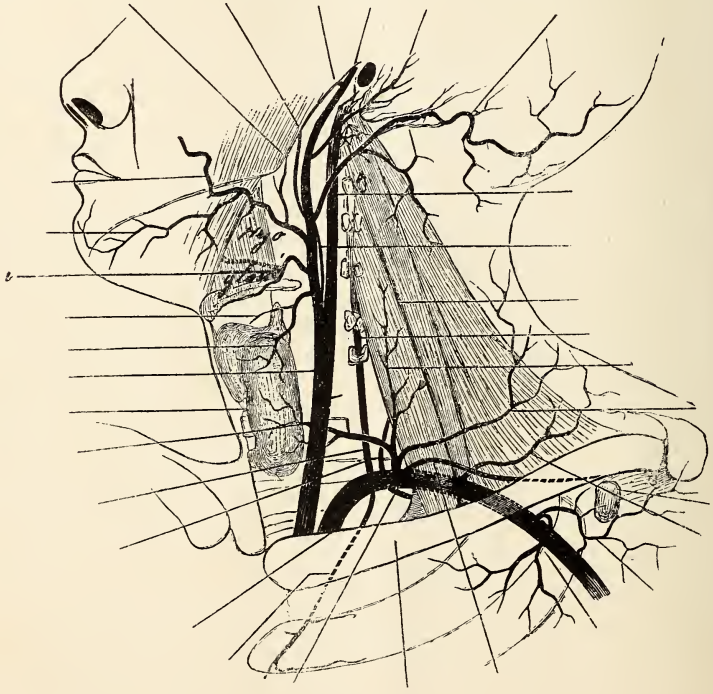

Fig. 73
Arteries of the Throat
L. Lingual Artery

system of "heart-to-lung" arteries, the other, "heart-to body." These arteries are again divided into many smaller arteries branching into every part of the body. The artery which most concerns the speaker and singer is the "carotis externus" which supplies the head and face with the necessary blood circulation. This artery again is divided into many branches running to the muscles of the throat—the pharynx, palate and tongue.

In Fig. 73 the branch artery marked "L" (lingualis) runs **directly** into the hyo-glossi muscle, showing again the emphasis which Nature has placed upon the importance of this muscle, by giving it a **direct** and large arterial supply.

The other arteries of importance to the vocalist are those which supply the chewing muscles, those strong, powerful muscles on either side of the jaw which are clearly shown in Fig. 74. They are marked

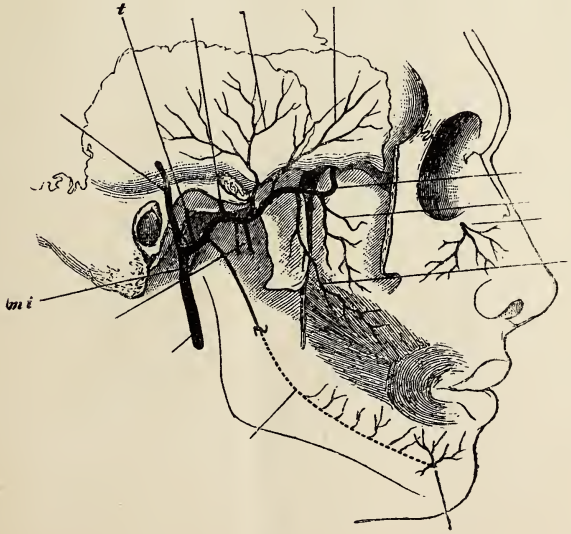

Fig. 74
Ear and Jaw Arteries

"mi," maxillaris interna. The tympanic, or hearing arteries "t," are also plainly shown.

A general view of the arteries of the chest, or "thorax," is given in Fig. 75. Although this belongs really to the lessons devoted to breathing, it is given here to show the continuity of the circulation of the blood through the entire body. The principal artery, marked "A," is called the aorta. The intestines, heart and lungs lie partly in front of and touching this principal artery. Therefore many vocalists who force

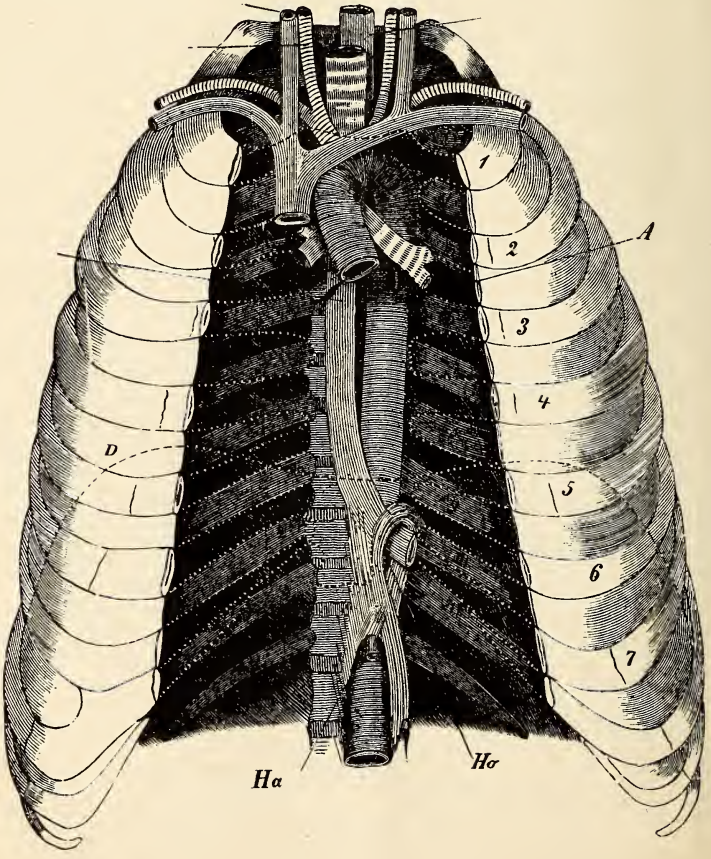

Fig. 75
Arteries of the Thorax

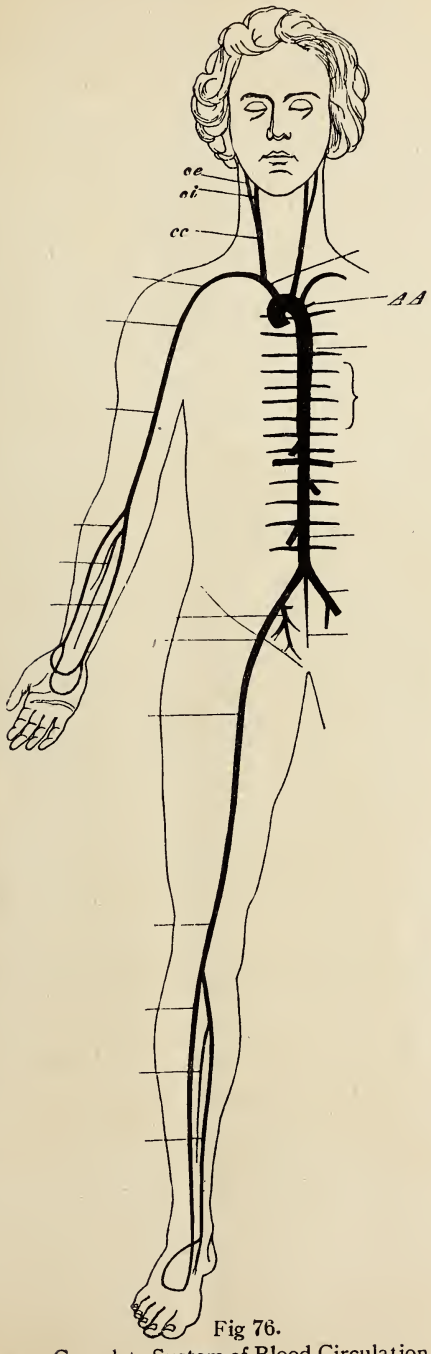

Fig 76.
Complete System of Blood Circulation

the voice or breathe in a forced, artificial manner are sometimes overcome with dizziness and even fainting spells. When the chest and the abdominal muscles are violently or unnaturally contracted, they force the internal parts of the abdomen and chest inward upon the aorta vein and thus impede or make difficult the free circulation of the blood. Of course there is at once a great disturbance which is registered in the brain and causes dizziness and even fainting.

Fig. 76 will give you a very good idea of the complete system of blood circulation over the entire body. At "AA" the great aorta artery divides; parts ascending to the throat and head, other parts descending into the abdomen, arms and legs. The arteries marked "cc," "ci," and "ce" are the "carotis," "external" and "internal" already mentioned.

The external carotis artery supplies the face and head, with the exception of the brain and the eyes; these are supplied by the internal carotis. The carotis externus supplies the thyroid, tongue and lingual muscles; also the teeth and the regions of the pharynx.

The internal carotis artery, as was said, supplies the brain and the eyes with the necessary blood.

EXERCISES FOR LESSON XI

With this exercise you are introduced to the most valuable parts of all the lessons so far sent you, that is, the infallible correct "attack." By this is meant the initial starting of a tone, whether for speaking or singing. Many otherwise good vocalists start a tone with a sort of grating or barking sound; others start the tone in a breathy, faint and uncertain manner. The attack, or starting of a tone, is really the most important part of all voice study, for upon the initial

start depends the clearness, the strength and quality of the voice.

Perhaps some of you have studied piano, violin or some other musical instrument. If so, you will remember that the most important part of your instructions were to be sure to always get the best tone possible. Now the best tone can only be obtained under right physical conditions. If too much force is used, the tone is hard and piercing. On the other hand, if no strength at all is used, then the tone is faint, uncertain and without character. Force is prohibited, but natural strength is demanded for a good attack. When the singer or speaker has to force the voice it means that the natural strength is deficient. Because of this deficiency, vocalists are tempted to use, not the correct and natural means of making a sound, but the unnatural means. Only when the organs which produce sound are strong enough to do their work with ease, then the sound will be the very best possible. You will find through studying the lessons on "attack," which tones are produced by your natural strength and also, if you test the attack on higher tones, you will quickly realize the limit of range natural to your present voice. When you realize this limit, you will, I am sure, be sensible enough not to force your voice beyond it, but to work patiently to create the necessary strength which will carry you far beyond your present limitations.

THE VOCAL ATTACK

If you will lay the palm of your hand against the back of the upper thigh and take a few steps, you will notice that the leg muscles swell and push against the hand. A similar action will occur if you lay your hand upon the upper arm and then move the forearm

up and down. The explanation of this swelling is that when any part of the body is about to move, the muscles of that part contract or draw together. In other words, they shorten themselves, but what they lose in length they gain in thickness. They become thicker, firmer, more compact and consequently harder. The change from a slack to a tense condition of a muscle occurs suddenly, therefore we notice the contraction as a jerk or stroke. This same action takes place in the vocal organ when it performs its functions correctly and naturally.

It is this muscular contraction that makes it possible for us to demonstrate to the eye and to the sense of touch, as well as to the ear, the right and wrong action of the vocal organ. If you have mastered all the previously described tongue exercises, you should now be ready for the test that is to determine the real condition of your hyoid muscle.

THE TEST

If you will make an examination, you will find that the under side of the tongue is attached to the bottom of the mouth. For this test insert the little finger, nail upward, under the center of the tongue. Rest the finger upon the teeth and raise the finger tip slightly, causing the tongue to rest upon the finger. Be careful to observe the following rules: The tongue must remain soft. It must not be drawn back. It must not extend forward over the teeth. Acquire this quiet, easy position of the tongue upon the little finger before you attempt to proceed further. See Fig. 77.

Hold the position described above, take the mirror in your other hand and observe the tongue, and by the dictation of your will form the tongue groove.

As the finger will be an obstacle, it may not at first be easy to make the groove. If this is the case, lay the mirror aside, and with the index finger of the free

Fig. 77.

hand, stroke and tickle the back of the tongue to encourage or provoke it to fall. The instant the groove is formed you will feel a light pressure upon the finger. Retain this pressure while you mentally count three, but be careful not to increase the pressure at all. Then suddenly relax the pressure and the groove will disappear. Repeat this exercise twenty-five times. If you can do this, your hyoid muscle is gaining strength and you are progressing favorably.

If you cannot do this exercise perfectly, continue to practice until you can. Sufficient practice is all that is necessary.

The hyoid muscle is peculiar. It cannot be forced; it has to be educated and mentally controlled. As already explained, it is nowhere attached to a firm bone, but lies relaxed in the throat. Because of this we cannot force it as we can the muscles of the arm. If you attempt any straining whatever with this muscle, the masticatory muscles will interfere and you will feel a strong pressure upon the finger. This is just what you do not want. Such pressure comes from a wrong source, a source from which proceeds not help but injury. This is the one thing you must prevent. All development of the voice depends upon the development of strength in the hyoid muscle; therefore my instructions are designed to bring about this development, and all the exercises I give here have for their object the development of this muscle.

A knowledge of breathing, etc., while useful, is still of secondary consideration. You cannot overestimate the value of exercising the tongue upon the little finger. Continue it for three or four weeks, or even longer, at frequent intervals through the day; you cannot practice it too much. Many will succeed at once; others will find it difficult. If it is difficult, remember you are holding the tongue too stiff. Merely learn to drop it as you do your arms, when they are tired, or as you close your eyes when you are sleepy.

A peculiarity which I have observed in many pupils is that those who have weak hyo-glossus muscles can grasp the exercises more readily and execute them with more ease than those in whom the muscles are naturally strong.

The only explanation I can suggest is that the muscles of a naturally strong tongue, because they

have never been directly controlled, are more awkward and respond more slowly.

When you succeed in making the groove against the underlying finger, notice casually, that the tongue rests upon the finger, that is, you feel the weight of the tongue resting on the little finger. You can use your right hand or left hand; it does not matter which.

After you have learned this, proceed to the following:

(1) Place the little finger as before under the tongue, then whisper or pronounce "kh;" do not say "kay," but simply make the consonant sound of "kh" several times. The tip of the tongue, or even the entire tongue, may tremble or move slightly; pay no attention to that. As you pronounce "kh" the rear end of the tongue is raised a little by the contraction of the palate to tongue and tonsil muscles; the slight motion of the tongue is caused by that contraction.

Once more pronounce the "kh;" this time hold it, that is, keep on saying or whispering "kh" for a few seconds, then suddenly say "ah." It will feel like "kh——ah." Say the "ah" as in father and say it loudly, but easily. Repeat this "kh——ah" many times; gradually notice that when you say the "ah" after the "kh" that the tongue seems to rest, or sit down as it were, upon your finger and that is what we want.

(2) Now take your mirror and look at the tongue while you pronounce "kh——ah." If you have succeeded in the exercise, you will see that at "kh" the tongue rises in the back, to stay there as long as you say "kh," but the instant you say "ah" the tongue falls, drops down and forms a groove.

Gradually learn to say "kh——ah," counting one for the "kh" and two for the "ah."

When you have mastered this, but not before, proceed to this:

(3) Again place little finger as before, now whisper several times "eeh, eeh, eeh." Notice with help of the mirror, that the tongue rises again in the back. Pay no attention to what happens with the front end of the tongue.

Now prolong the whisper "eeh" and suddenly go to "ah" as in father. Notice that at "ah" the tongue again drops down, forms a groove and seems to rest upon the finger. Notice this resting position of the tongue; it feels as if the tongue were slightly pressing upon the little finger.

Do as before, but instead of whispering "eeh——ah," say it out loud.

(4) Again put the little finger under the tongue. Now whisper "a," as in "pay." Watch the tongue with the mirror and notice that it rises upward as in the other sounds. Again say the "ah" after a prolonged whisper of the "a," thus "a——ah." Notice that at "ah" the tongue falls and grooves. Now speak the "a——ah" loud, gradually count (mentally) one for "a," two for "ah."

Surely you will now understand how to relax the tongue.

You are absolutely perfect if at the "ah" sound, there is merely a dropping of the rear part of the tongue and practically no motion in front.

(5) Repeat all the above exercises, while you place the forefinger of the other hand under the cricoid cartilage. Of course you cannot now use the mirror. Gradually eliminate all motions of the cricoid while you whisper or speak the different exercises.

If you merely do the exercises easily enough you will succeed. You must center all your thoughts on

the tongue. Forget everything else and concentrate on the tongue.

(6) Practice also without sounds, that is, at count one drop the rear part of the tongue, at count two let the tongue rise up. Do not force the tongue up at count two, merely let go of the downward effort and it will jump upward of its own accord. Always notice that when the tongue falls, you feel a pressure on the finger and that when it rises there is no longer a pressure.

Gradually think that you are making this little pressure or "beat" purposely of your own free will, and that you can release the pressure also of your own free will.

I am sure that you can understand this very important lesson; I really do not know how to make it any plainer. Have patience and it will come to you.

Be sure that you master this very important lesson.

This lesson is of especial importance to defective voices.

EXAMINATION QUESTIONS ON LESSON XI

(1) What is the object of the arteries?

(2) Has the tongue a special blood supply?

(3) Which is the central organ of blood supply?

(4) What is the difference between Theory and Practice?

(5) What may cause dizziness and fainting spells?

(6) What is your success with groove against finger?

(7) Do you feel a beat or pressure on the finger when you make the groove?

(8) Can the hyoid muscle be forced?

(9) What is your success in "kh——ah?"

(10) What is your success in "a——ah?"

LESSON 12

PHYSIOLOGY OF THE VOCAL ORGAN

(*Concluded*)

THE NERVOUS SYSTEM—NEUROLOGY

The nervous system is contained within the animal tube of the body. Its central organism is the spine and the brain. The nerves are fibres which run from the central organism to the different parts of the body. The controlling organ is the brain. The spine is the seat of the senses, the will, and all spiritual activities. The nerves are only the wires connecting the brain with the different parts of the body, especially through the muscles. According to the way in which the nerves affect parts of the muscles they are called motor, sensory or secretionary nerves.

There is another system of nerves called sympathetic nerves, having to do with the intestines, etc.; but these belong to the vegetable tube and do not concern us.

The nerves consist of fibres and cells. The fibres consist of a white substance, the cells of a gray nerve substance. Just as the arteries branch out of some main channel, so do the nerves grow in bundles out of the bony tube of the spine, and divide into many fibres which, like telegraph wires, reach in all directions. Each muscle has its individual nerves which control it.

There are twelve pairs of brain-nerves, specifically motor and sensory nerves. They spread over the head, throat, chest and partly into the abdomen. These are the nerves of smell, sight, taste, hearing and secretion; and also the nerves which control the movements of the eyes, lips, tongue, palate, larynx, etc. Only those nerves which have to do directly or

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indirectly with the vocal organ, are of interest to the voice student; hence, I shall briefly touch upon them only.

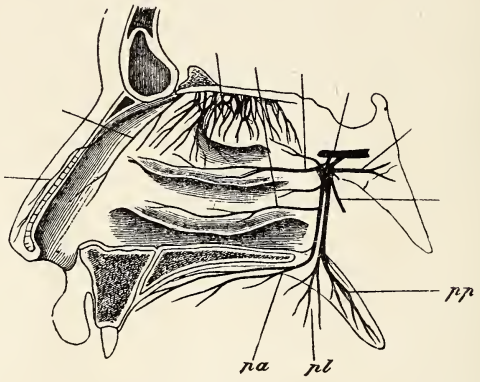

Fig. 78
Nerves: Nose, Palate, Pharynx.

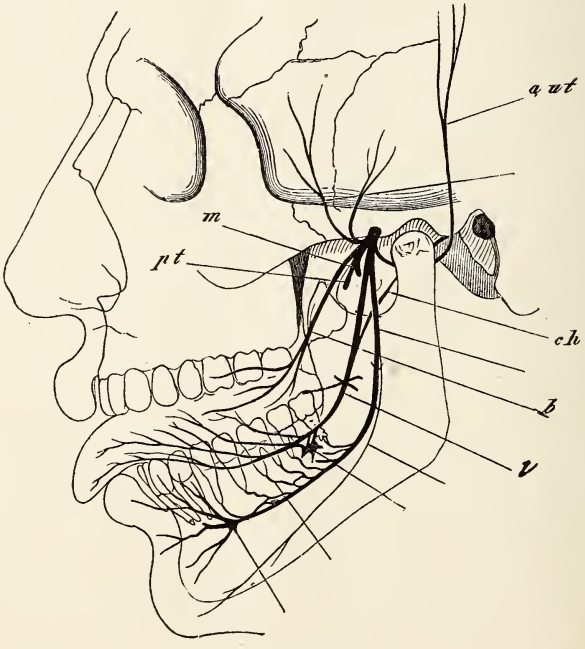

Fig. 79
Tympanic and Lingual Nerve.

These nerves spread within the hollow space between the nose and the palate and pharynx, as shown by Fig. 78.

At "aut" arises the tympanic nerve, which controls especially the sense of hearing, as shown in Fig. 79. All the nerves I shall mention have one common origin, hence they operate together. The tympanic nerve has one branch running downward directly into the lingual nerve, "V." The lingual nerve is the special nerve of speech. It runs directly into the hyo-glossus muscles and branches from there into the genio-glossus, against which the hyo-glossus braces itself to stretch the vocal chords.

This is a most significant fact. It points again to the great importance of the hyo-glossus muscles as the **main** agents of voice. Since the nerve of hearing branches into the nerves of the tongue, that is, into the nerves of speech, you can readily see that the nerves of hearing and the nerves of speech are almost identical.

The ear conceives a tone. The tongue, or rather, the hyo-glossus executes the tone, being assisted by the muscles of the palate and larynx, which also have a common center with the other nerves. This fact becomes still more significant when you examine Fig. 80, where you can see how the laryngeal nerves again touch the hyo-glossus muscles and run directly over the hyoid bone into the larynx. The close relation between voice and health may also be observed in this illustration. You notice that the main nerve rises from the heart "AA" and the stomach "Pga." At the heart the nerve shoots a special branch upward into the larynx. This in itself explains the emotional relations of the voice with the heart, which has to supply nervous force to the voice and stomach muscles

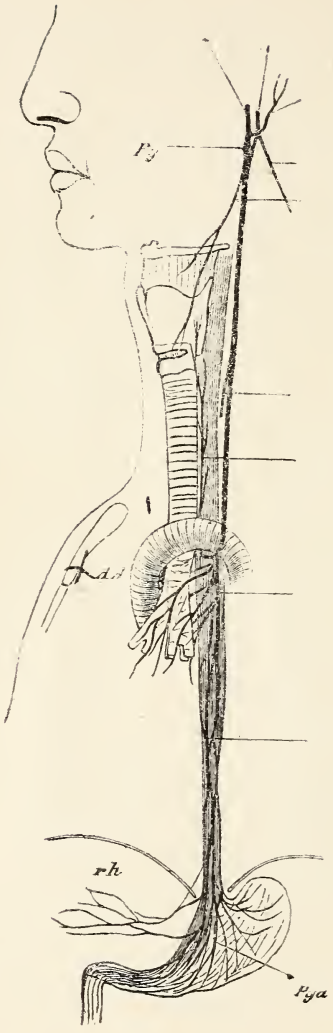

Fig. 80

Laryngeal Nerves.

as well as to its own. It shows how much they must depend upon each other. Suppose the vocal organ or, rather, the muscles which control and move the vocal organ are too weak to do this work, then they

cannot contract; that is, they cannot respond to the demands of the nerves.

The consequence must be that the nerves of these muscles will lose strength and possibly become atrophied, which is the case with many stammerers and others with speech defects. In this case, surely the nerves of the heart and stomach are to some degree also affected. On the other hand, when the muscles into which these nerves enter are in a healthy state, the nerves will remain healthy also, assuring that the central organs of the heart, lungs and stomach are in a normally healthy condition. You can trace the nerves from the brain, their common center, to the particular parts which they control.

Fig. 81 gives a complete view of the brain as seen from below. "H" shows the origin of the hyo-glossus

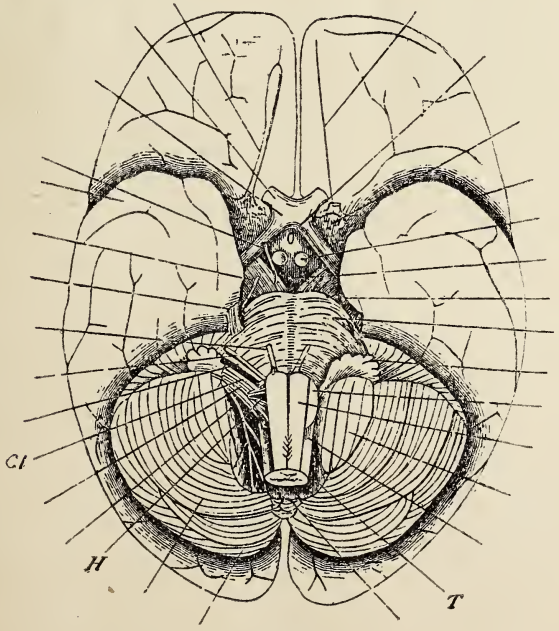

Fig. 81

The Brain and Its Nerves.

nerve. "Gl" shows the nerves of the tongue and pharynx. "T" shows the palate nerves. All these nerves belong to the group of motor nerves; that is, these nerves move the muscles to which they are attached.

As a rule, muscles connect the bones of the body through the medium of a ligament or tendon. A muscle usually consists of three parts: an origin, body and head. By the origin is meant a bone that is firmly fixed. Out of this bone the muscle grows, while the other end or head is attached to a movable bone. Muscles are formed into groups; several muscles help to perform the same office; for instance, when we take a step, several muscles unite to move the bones at the same instant. Each group of muscles is supplied with one or more nerves.

Dr. Foster, of London, England, in his interesting work, describes the inner workings of a muscle thus: "One should think of a muscle as containing many cells which lie beside one another like particles of powder. To each of these particles leads a thread from the central battery of the brain. The explosion of one of these particles contracts the muscle instantly, and it remains contracted until a part of the negative battery is exploded, when the muscle at once returns to its original relaxed position. If we try to force a muscle it refuses to work, because, as it seems, the positive and negative batteries neutralize each other, so that the muscle cannot work at all. After the particles are exploded, the muscle is tired or broken down. During rest the blood builds up new particles, and in this way a muscle is rebuilt and made stronger."

Therefore, all ideas of force must be dismissed. But the theory of looseness and flabbiness, so often taught, is just as pernicious. In both cases the muscles

refuse to work and become useless. If, however, we strengthen the muscles, there is no need to force them, for they will then do their work automatically.

Beside the motor nerves, there are nerves of the senses. They are called the "sensory" nerves. These nerves are especially the nerves of sight, taste, smelling, hearing and secretion.

THE SENSE OF HEARING

The organ of hearing is divided into three parts. The outer part, or ear proper, conveys the tone or vibrations to the middle ear, or the tympanum, and thence to the inner ear, or labyrinth.

The external ear (Fig. 82) consists of cartilages, covered by facial skin. The cartilages are connected with the head by muscles, which occasionally are capable of moving the ear. This is supposed to be a survival from prehistoric times, when, it is claimed, men moved their ears, as a horse does now. The external ear conveys the sound waves to the ear canal (Fig. 83). At the end of this canal is situated the tympanic membrane. This membrane resembles the membrane in a telephone, or the head of a drum, and transmits vibrations to the little ear bones.

The middle ear consists of the tympanic cavity, into which opens the eustachian tube, connecting the ear with the pharynx of the throat. It also contains the three bones which transmit the sound waves or any vibrations to the labyrinth and through it to the auricular nerve. The three bones (Fig. 84), "a," hammer, "b," anvil, and "c," stirrup, are controlled by means of special muscles.

The inner ear consists of the so-called labyrinth, which is divided into the "Fr" vestibule, "l" canal, and "c" cochlea (Fig. 85). From the organs of hear-

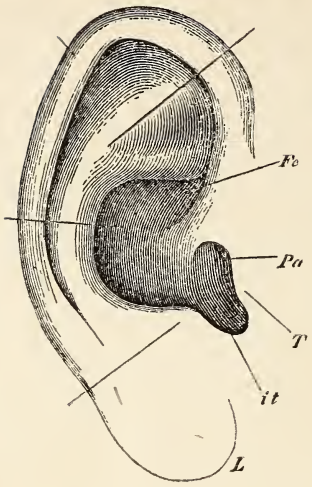

Fig. 82
The Ear.

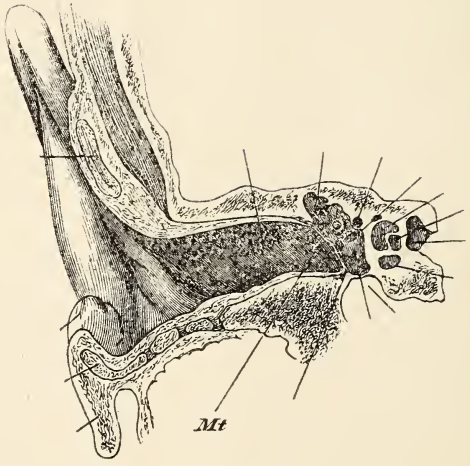

Fig. 83
Ear Canal.

ing, nerves lead to the brain; vibrations originating in an instrument are conveyed through the air to the tympanic membrane, thence to the labyrinth and through it to the ear nerves. They cause certain

sensations or produce certain effects in the brain, which we receive as words and tones, or if the vibrations are unsteady or irregular, as noises.

Recent researches assure us that there are no less than 60,000 fibres in the inner ear, each of which will respond to a different vibration, thus giving the human ear a scale of 60,000 different sounds, infinitely more than any musical system is likely ever to utilize.

Fig. 84
The Ear Bones.

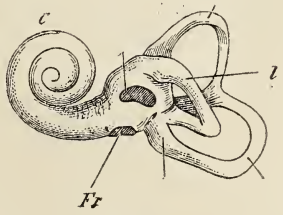

Fig. 85
The Labyrinth.

Whether the sound is single, as in the human voice, or manifold, as in the case of an orchestra, the brain receives a certain impression. The pitch, the tone color, the dynamic changes from loud to soft, or vice versa, will affect us very much, as a blue sky will make us feel good, while fog and rain will have the opposite effect. In music, for instance, a piece written in G major will impress us as joyful, lively, while one

written in B flat minor will affect us as melancholy and sad. A change of key or a change from major to minor, even short harmonic changes in the same piece, will affect our feelings, changing joy and courage to sadness or despondency, etc. All this occurs because certain stimulations of the heart, lungs and vocal chords are being conveyed by the nerves of hearing to the brain.

When you consider the acuteness of our sense of hearing, its immediate effect on us all, you will all the more realize the importance of a good voice. Your success in life, the happiness of those around you, largely depends upon the quality of your voice.

The physiology of the vocal organ is now finished. In other lessons you will be taught the physiology of the breathing organ, for while the breath is absolutely necessary to the voice, it is an organ by itself and must be studied separately.

The primary object of the breathing organ is to supply the entire body with the necessary oxygen, and only in a secondary sense does the breathing organ function as a source of breath supply to the vocal organ.

Still later in the course, certain parts of the human body, especially the masticatory apparatus must be considered, because these particular parts interfere with the voice. My lessons aim to be, first of all, a positive process of building up, therefore I give you a progressive, positive work, explaining, as we go along, why such work is necessary and proving each point so that you can see for yourself why the work must be done in the way I have prescribed.

There are conditions which interfere with the voice, but if you know what to do, you will not be tempted to try negative experiments. Yet for a full under-

standing of the matter of voice, even the negative side must be considered, and this side of the vocal question also will be made known to you in good time.

In the next few lessons, the philosophy and physiology and history of voice will be briefly dwelt upon. I would advise each student, while we have a breathing spell, to go over his lessons on the physiology of voice repeatedly. Even if you do not want to go beyond the amateur stage of voice development, your progress will be surer and shorter if you thoroughly understand the subject. Try to know all about it; reason out every single part in your mind; it will help you, not only in your exercises, but it will train your mind to think logically and consecutively.

EXERCISES TO LESSON 12
RAISING AND LOWERING THE LARYNX

Place the nail side of the forefinger against the ring cartilage (see Fig. 30), and yawn slowly and noiselessly. After a few attempts you will notice that the larynx is strongly drawn downward. With a deep yawn the finger will even be pushed aside and the larynx almost disappear into the throat, and this in spite of a strong upward pressure of the finger. When you have acquired some proficiency in forcing the larynx down, picture to yourself or think of the larynx as suddenly depressed, and then sing a few notes or speak a few words, and later a few sentences, or read something aloud.

You will notice that at first the tone becomes stronger. If you have a naturally deep voice, the sounds will be agreeable to the ear, but if you continue them for any length of time, your voice will tire and become hollow. In higher voices this tone is throaty and in a short time becomes husky and tired. The

larynx is drawn downward by the downward pulling throat muscles. When the larynx is in this position the vocal cords become temporarily enlarged, hence the larger tone, but they are not being stretched, hence the strain and the unnatural voice. This kind of singing and speaking is much taught and is falsely designated "the chest voice."

Place the forefinger against the lower side of the ring cartilage. Now attempt to swallow. If necessary, use a little water or, still better, some hot liquid, and you will observe a sudden rising of the entire larynx. This action will be still more noticeable if you lay the finger in the front hollow of the thyroid cartilage No. 2A, and then swallow. You can even press down with considerable strength upon the thyroid cartilage and then, when you swallow suddenly, the finger, in spite of the resistance, will be pushed aside and the larynx raised high.

The larynx is lifted by the palate muscles (No. 17). If no resistance is opposed to this rising of the larynx, the vocal cords become thin and the tone, in consequence, high and light. Endeavor to retain this raised position of the larynx while speaking and you will observe that the tone rings higher, but thinner and lighter. A voice of this character does very well for a small room, but for public speaking or singing the tone is too small. This method of singing or speaking is just as injurious and unnatural as the previous one, where the larynx is drawn downward. Indeed, the raised larynx is even more destructive to sound than the lowered one.

The downward pulling muscles are fastened below to the breast bone (No. 6) and above to the forward part of the thyroid cartilage (No. 2A). The upward pulling muscles are attached to the back of the thyroid

cartilage (No. 2B) and stretched from there into the palate (No. 9 and 15). These two forces should always balance, that is, the upward pull and the downward pull should be equal. When this is the case, the larynx will remain in its natural position and the vocal cords will be correctly stretched. This equalizing can, however, only take place when the tongue, the greatest of all the speech muscles (No. 12, 10A and 10B), reinforces the strength of the others. If the necessary tongue support is not available, the other muscles can make but slight efforts and, as a result, the tone is lifeless. If, however, the tongue is powerful, it reinforces the other muscles, they become normally active and perform their work with ease. Under these favorable conditions, the tone is full of power and life and no strain is necessary to produce it; it comes of itself.

The raising and lowering of the larynx is not to be practiced as an exercise. You are to do it only until you can make the larynx go up or down by **thinking.** I simply want you to know of these possibilities.

DEEP INHALING

For drawing in the breath easily and deeply, practice the following excellent exercise:

Seat yourself comfortably, resting your back against the chair. Then let your head and shoulders fall forward carelessly. Remain in this relaxed position and draw the stomach lightly and loosely inward. Hold it in this position and inhale, while you whisper "ooh."

You will feel a noticeable spreading of the lower part of the back, also that it presses against the back of the chair and that the lower chest becomes enlarged.

Now utter a strong "ss" and you will find that the stomach and chest gradually return to their normal positions and in so doing forcibly press out the breath and without the least exertion. When this exercise is thoroughly understood, the intentional drawing in of the stomach may be omitted, but not before. After you understand the exercise you should cease thinking about the stomach and only expect a deep enlarging of the chest and back. If you do this, an involuntary motion of the stomach will follow naturally.

During the exhalation, the drooping shoulders and head will return to their natural upright position. When you are master of this exercise, you will be able to take a deep breath in half a second without whispering "ooh," but by merely thinking it. You should be able to inhale and exhale in one second. For the exhaling always use the "ss" sound.

When you can inhale and exhale as instructed, then read short sentences and follow these by longer ones. Read loudly and distinctly and as soon as the breath is used up, draw another in the manner I have described. At first, the breath should be inhaled after each sentence. You will soon find that this is both simple and easy and that you do not need to "save your breath" as many advise.

The forming of the mouth for the "ooh" and "ss" places the opening of the throat in the most favorable position for the quick passage of the air to and from the lungs.

Deep inhaling should be practiced often, but not long at a time. Reading and speaking, while correctly exhaling, should be practiced a little daily.

Keep up the practice of grooving the tongue against underlying little finger.

EXAMINATION QUESTIONS ON LESSON 12

A REVIEW EXAMINATION OF THE FIRST TWELVE LESSONS

(1) Where is the infallible attack?

(2) Are the vocal chords a single pair of muscles or what?

(3) Do you now understand Fig. 30, page 75?

(4) Where does the breath originate?

(5) What does the breath do?

(6) Can you now make groove with utmost ease?

(7) What is the most important muscle in voice?

(8) What is the pharynx?

(9) What is the glottis?

(10) What is the air tube?

(11) What is the oesophagus?

(12) What is the palate?

(13) Should the larynx move when speaking or singing?

(14) Can you isolate the hyo-glossus muscle?

(15) What is the object of the hyoid bone?

(16) Has the hyo-glossus muscle a special nerve supply?

(17) Has the hyo-glossus muscle a special blood supply?

(18) The exercises and lessons so far have been mainly preparatory. Can you realize the importance of such a preparation?

LESSON 13

THE HISTORY OF VOICE AND VOICE METHODS (ANCIENT)

The study of voice preceded every other form of culture. "Let there be light" were the first words spoken, and such was the power of this voice that all things were created thereby.

Before the first sound was possible in the visible world, untold eternities passed away. Slowly the elements ordered themselves at the divine command; epoch was followed by epoch; immense forests of ferns and palms arose; through them pounded and wheezed creatures of inconceivable size; the dinosaur, iguanodon, diplodocus and mammoth lived and found the world good to their taste.

Millions of years passed away before the telluric upheavals within the earth had created a new balance of adjustment. High mountains arose from the depth. The earth was shocked with mighty convulsions. From craters and geysers flowed cataracts of chemical substances in mighty streams; out of the salty perspiration of the gigantic combat the oceans were formed. The old order had disappeared to give place to the reposeful paleological era.

Exhaustion seemed to brood over the earth. Time was no more. Life had disappeared. But here and there, in little mud puddles, were some tiny cells of life; some infinite power of re-creation had been saved even in the era of destruction. Slowly new forms of life developed and produced themselves. In the course of ages these new forms of life shaped our present world and what is found therein. All sorts of animal

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life appeared, but now in many new forms and of many and diverse kinds. Not crude and ponderous, slow and dull, as in former periods, but of finely chiseled features, body and limbs; fleet, many of them, and highly intelligent. Nature had become an artist—with experience had come higher demands and greater vision.

In this period, with stealthy, silent steps, a form, upright with projecting jaw, the body covered with long hair, in his hand a sling containing a sharp stone to slay the sleeping hare, in the heat of day, appeared something unknown heretofore — a man, our pre-adamite progenitor.

From the trees birds sang their improvised melodies; it was the first sign of audible Nature, made beautiful.

The young maidens in diluvial time, in the valley of Couze, in France, listened and gave vent to their love longing in sounds learned from these birds. Gradually words, crude and simple, were added to these sounds. This was the origin of speech and song. When they became mothers, new thoughts and a new form of love filled their souls. New demands were created, new words invented to give it expression. In this wise, speech was developed, love and cradle songs invented.

The impulse both to speech and song is born with man. He had to make his desires known in the circle of the tribe. He wanted to recount his successes in the hunt. As his emotion took stronger hold he burst into song, uncouth, no doubt, but to him an expression of the life within.

Later, as the tribes marched to war, he burst into martial strains. He sees his enemy lying dead before him and exults in shouts of joy. In the evening, around

the camp fire, the sorcerer of primitive times, later the medicine man and still later the priest, recite the heroic deeds of the mighty warriors of the tribe. All repeat the strains, and the crude form of national life, of love of the tribe—patriotism—has become an accomplished fact.

At this time, "accident," the greatest discoverer of all, caused a boy to blow into a discarded, defective drinking horn. A new sound was heard. The bugle and trumpet were discovered. Another boy beat a stick against a skin, stretched over a hollow log to dry, and the drum became known. As the arrow sped from the bent bow, the string gave forth a new kind of tone. The father of all violins was disclosed.

How terrifying, how fierce was the sight, when the men, clothed in the skins of bears, wolves and buffaloes, danced around the camp fire, when drunk with mead and emotion they circled around the tribal emblem, an oak tree of a thousand years' growth, an emblem of life and strength!

Countless generations passed. The pace of development was exceedingly slow. No marching forward, rather snail's crawl, with many pauses and, not infrequently, a falling back. In spite of the manifold capacity within us, men rose unspeakably slowly from the stage of animal savagery. For while a tree produces a new ring each year, to mark the progress of its growth, man needs an entire generation to move one step forward. The man took a wife, or several of them, lived and hungered with them, when fortune was against him. This community he called, in conscious or unconscious irony, a family (Latin, Fames—Hunger).

Now and then, in winter time, when hunting was impossible and stealing unprofitable, a maimed or cripple of the tribe would sing or recite some wild hunting

adventure, or praise the heroic deeds of some member long dead and now become the saint or honor emblem of the tribe. Or, in summer time, he might travel from tribe to tribe and carry his rhapsodies to them in exchange for food and mead. Thus was born the Bard of the Celt, the Trouvère of the French, the Minnesinger of Germany, the newspaper of today. He was the Homer of all times.

From caves and holes in the earth, families moved to huts made of stone and mud, or else built upon posts and tree trunks in swamps. Gradually such groups became villages, surrounded by palisades, and later by stone walls. The few who, by valor, superior cunning or by stealth, rose above the numerous common herd, built for themselves castles of stone. Illios was founded and nine times destroyed. Tyre and Mycene ruled the valleys of Argos; Babylon, Nineveh, Palmyra were built. Cities counting millions of inhabitants erected palaces to their kings and filled them with ivory, gold and beautiful women. The few had succeeded in making slaves of the many. Out of crude beginnings of mutual communication a highly and richly endowed language had been evolved. From the crude recitation of a simple hunting adventure the classic poem took form.

But mere speech could not satisfy. The rhapsody sounded cold and monotonous in the wide halls of the king. With angry face and bored silence the men reached for their cups, but when the Bard plucked the strings of the lyre and with far-reaching voice sang the praises of the king; his courage, which shames the lion; his strength, which is as that of five hundred steers; his anger, which is like the lightning and thunder in a summer's storm; his wives, so lovely that the roses bow to them as they walk in the garden,

with their rapturous forms and love-lit eyes, the men listened; they became interested.

Fig. 86

Assyrian Lion Hunt.

This is the mystic time of humanity; a gradual unfolding, born of the necessities and desires of men.

Practical life demanded and achieved comparatively quickly the development of speech, which was recorded by means of lines, curves and figures, that remain, even to this day, as historic evidence of the gradual progress of human speech. Of their music we have no record. No one seems to have thought of fixing those sounds by means of signs.

The Chinese had achieved a theory of music thousands of years before the Christian era. Melodies are still found in very ancient temples. They are within a scale of five whole tones. The semitone was not known. As far back as 3460 B. C. musical rules were established and around 1500 B. C. half tones were introduced, leading to our present chromatic scale. But the old order of the scale of five whole tones still predominates in China, whose instruments are still based upon the old theories and laws.

In India, the land of immeasurable wealth and of hunger, the same system as the Chinese was current. There singers were much in evidence. They were, however, mostly mendicants, who sang the praises of anyone rich enough to pay them well.

In the Rigveda, the old monument of Indian literature, are found 1,017 hymns, mostly religious. But secular songs, love songs, to the praise of victories, etc., were by no means rare. To some of these songs were ascribed supernatural influences. They could transmute beasts and men. When the God Krishna lived in India, it is said that of 16,000 shepherd girls each invented a new scale in which they sang melodies of their love for the handsome young shepherd god.

The Greek philosopher, Plato, returning from Egypt long before the Christian era, said that he had seen the records of songs which had then been in existence for over 10,000 years. These songs had the power to ennoble and improve men. The songs therefore must be gifts of the gods.

To the ancient Greeks the heavens were still open and the gods walked on earth. To them the gods were a reality. They were the "Supermen" of their day, living, teaching and even sinning with the man of clay.

Of Egyptian music we have no record, as they evidently had no signs for musical notation. But the monuments still standing in Egypt show a great variety of musical instruments. Men and women singers are found on these monuments. They had already achieved a great measure of prominence. Rich families had their own singers. The singers of Pharaoh were called "Singers of the master of the world."

The "Fellahs" of Egypt to this day use the identical instruments of their progenitors of 4,000 years ago.

Their daughters, slender and shapely, seem to have just risen from the graves of the old Egypt, as they, with swinging step, the water pitcher on their heads, seem to quench the thirst of thousands of years. Their songs are in reality mere recitations and repeated calls of encouragement as they work together. Verdi has recorded these melodies in his opera "Aida." Through these rhythmical songs the Egyptian foreman held his

Fig. 87

Hall of Columns at Karnak, Egypt.

laborors together, made them work in harmony in a certain rhythmic swing that not only encouraged the laborors, but speeded the work. Egypt became a province of Persia and later of Macedonia.

Thirty years before Christ the Romans overran the Promised Land. Later Mohammed was born, a poor, sickly man, and suffering from hallucinations, as we say now. A dreamer of dreams, only good enough to herd sheep and goats. But this man let loose a revolutionary storm upon the world which conquered mighty empires. If the empires which his faith converted had been organized, they would still be the strongest factors.

Neither Cyrus nor Napoleon, Alexander the Great nor Charlemagne, Darius nor Attila, Confucius nor Buddha achieved as much social and political influence as Mohammed, the Prophet. Mohammed copied Jehovah and Christ and to their teachings added the fanaticism which spread his influence over many millions of still barbaric tribes. He knew human nature, knew how to arouse the enthusiasm and blind fanaticism which will sacrifice itself for an ideal. Egypt changed its Roman masters for the religion of Mohammed. All Asia, Palestine, Persia, the rest of Africa, India, Spain, the Balkans and most of Hungary were conquered by the faith of Mohammed. Of all these nations now become Mohammedan, only Persia had a distinctly national music, and that became mixed with the Egyptian to become the Arabian system of music.

Arab music, whether we hear it in Constantinople, Cairo, Algiers, or in the desert, consists of short phrases, in connection with a certain rhythm endlessly repeated. The listeners sit around silently and very likely thoughtlessly, smoking the schibuk or narghile, the most modern of them the cigarette, before them an empty coffee tasse. The Arab music does not aim at stimulating thought and feeling, but at deadening **both** of them.

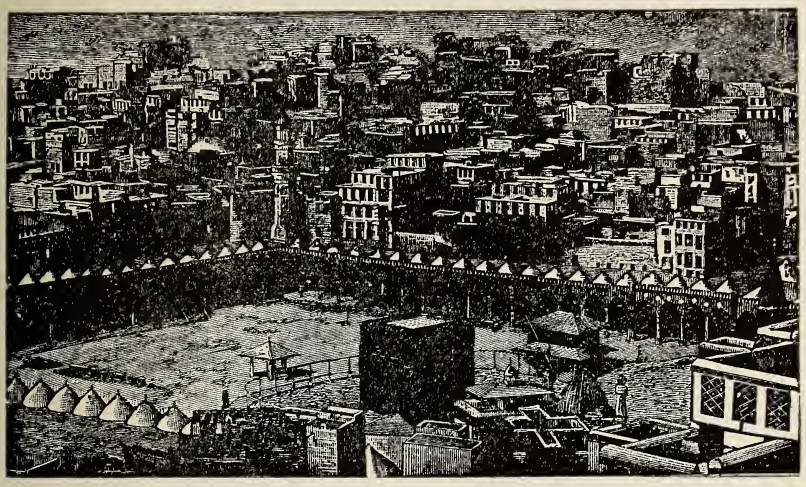

Fig. 88
Mosque at Mecca, Arabia.

Their method of voice production is very simple. They press the tongue against the palate and emit sounds through the nose.

The present-day advocates of voice methods based upon the resonance of the cavities of the nose and pharynx (throat) should study the Arab method. It is much more simple than theirs and brings quicker results.

However, with such a method of voice production, only a few tones, and those of the crudest, were possible. But when thousands repeated certain phrases, the effect upon a primitive people must have been hypnotic.

The Jews were much farther advanced in music and singing, which occupied a high place in their religious services, as we can easily judge from many passages in the Bible. Both Saul and David were singers; even some of the Prophets sang — no doubt to bring their prophecies nearer home to people. The charac-

teristic of Hebrew singing was the nasal and guttural voice. Melodies, no doubt of much charm, some very elaborate, as we see in their "col nidrei," are still in use at the present day.

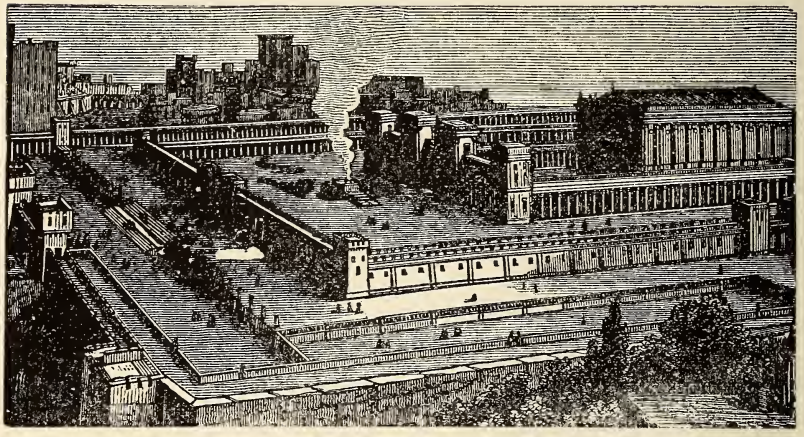

Fig. 89
The Temple of Solomon.

The ancient Greeks have left us a complicated musical system which remained in use up to the middle ages of the Christian era. This system was entirely based on melody and song. The instruments merely gave the keynote to the melody. A high standard of musical feeling can be traced to them by the fact that they realized and felt the difference of tonality and key. Thus, to express sadness, they sang in what they called the Lydian key. Religion was expressed in Doric, courage and battle cries in the Phrygian key; love and wine in the Aeolian key. The oldest song of which we have any record was a funeral dirge in use among the people surrounding the Aegean Sea.

It was sung to the dying Adonis, symbolizing the passing away of the spring and summer season. When

the Argonauts started on the search for the golden fleece, Orpheus, through his playing, encouraged the heroes around him to new efforts when the search seemed to fail. He changed lions and tigers into lamb-like creatures, made stones and trees to talk and move; all of which is symbolical of the power of music to tame the passions and to arouse lofty sentiments.

Amphion surrounded Thebes with a wall of stones, causing them to move of their own account and to group themselves into a wall, at the sound of his lyre. This, of course, means simply that the workmen were greatly diverted and encouraged during the work of

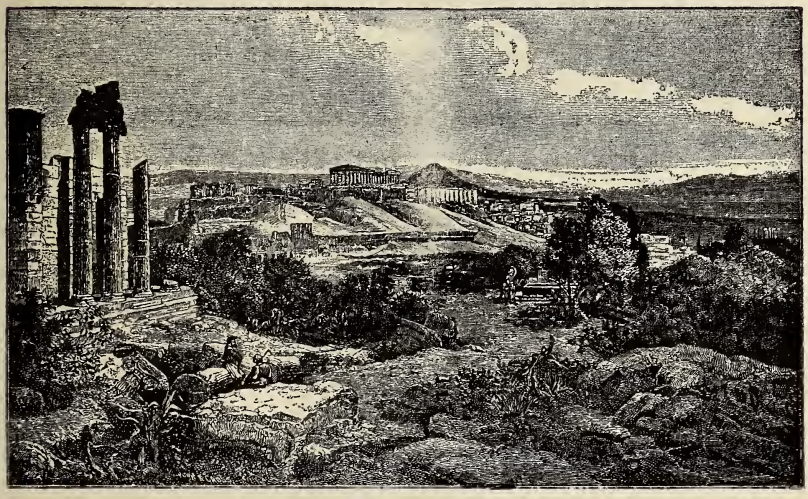

Fig. 90

Acropolis of Athens.

erecting the walls, while music was being played to them.

Arion, one of the greatest of the Greek oratorical singers, while returning from Sicily to Corinth, was threatened with death by pirates. He asked them as a favor to allow him to sing once more before they took

his life. With a voice reaching far out into the sea, he sang his last hymn to the gods and then jumped into the sea, but a Dolphin, charmed by his voice, took him on his back and carried the singer to Corinth.

The difference between our official candidates and the political aspirants in Greece, long before the Christian era, are only different in kind, not in their aim or choice of means to get there.

Where our candidates offer clambakes, barbecues or oyster suppers, the Greeks engaged singers to arouse enthusiasm for the party and their special candidate.

Even "Votes for Women" were advocated by means of songs and music. Sappho, the sublime poetess, sang not only of love divine, but also of human love, and gained much political influence. She was followed by a large school of women poets.

With the ancient Greeks, singing was not a pastime, but a means of culture. Life needs proportion and harmony, says Plato, their greatest philosopher. In accordance with this, children and youths were taught oratory and music in order to learn rhythm and order, which developed their souls and gave them self-control to meet the requirements of life.

The highest point of artistic development was reached in Athens. There poetry, oratory, mimicry and music were united. Large choruses and orchestras were employed with singers and orators. Out of this grew modern Grand Opera.

The Olympic festivals, where races and contests of various kinds took place, were enriched and ennobled by music and oratory. A special hymn was composed in honor of the chief visitor. His statue was erected in one of the holy groves. Over 3,000 of such statues were in existence at the time of the Persian invasion. The traditions of a noble art inspired the ancient

Greeks and raised their civilization to a higher physical basis than any which humanity has had before or since.

But ancient Greece is no more. Their philosophers died out, degenerated; from its pedestal of nobility and grandeur music descended to become the handmaiden of the charlatan and juggler. The singer who could sustain a tone longest or the one who could execute the most difficult trills and neck-breaking passages became the favorite. One singer, Moschos by name, while executing difficult scales and trills, also could turn his tongue upside down in his mouth, and this trick pleased the people more than the noble voice and deep

Fig. 91
Bacchic Procession (Greece).

feeling of real artists. (You see the importance of the tongue everywhere, in India, Judea and now Greece.) The vocalists became acrobats. Art became mere glitter and show. Bizarre changes of harmony and rhythm became popular. Music became a mere means of display and declined, never to rise again in its original home. Is not our "jazz" music the forerunner of moral, intellectual and physical decay also?

Earthquakes finally ruined the Olympia of old and buried the glory of Greece under mountains of sand. Two hymns, engraved on stone, were found in 1893 by

French scientists in Delphi, where Oracles predicted the failure or success of wars to be undertaken, or prophesied the future to private inquirers. These hymns call for an extended compass of voice, showing that voice culture must at that time have attained a high degree of development.

The ancients knew only Greek music. The Romans inherited this music and adopted it without changing or improving it in any way.

These historic researches may not interest every one of my students, yet all will profit by reading what has been related. I want to show you that in your search for a better voice you are occupying a really exalted stage of human development where mere physical comfort no longer satisfies. You have reached a spiritual stage of development which drives you forward. No better evidence of human growth can be found than a splendid voice. Longfellow realized this in his "Hyperion," where he says:

"O, how wonderful is the human voice!
It is, indeed, the organ of the soul!"

EXERCISES ON LESSON XIII

The instructions I give you are identical with those that have won for my method the praise of the press and the singing and speaking public of Europe. They have never failed to produce entirely satisfactory results, so you may follow them with the utmost confidence.

My instructions are based upon exact scientific foundation. They follow Nature and Nature's laws. In the past the vocal apparatus was regarded as an instrument furnished to us by Nature in a fully finished state and ready for use. This was an incorrect sup-

position, for there are very few naturally perfect vocal organs.

Depending on the assumption that the vocal organ was delivered to us complete and perfect, people believed that a perfect voice could always be obtained if certain singing or speaking exercises were persisted in. Experience has taught those who have cared to observe that to overexercise or to overuse a weak or imperfect vocal instrument is to ruin it and make the voice useless.

The vocal organ is an instrument and usually a faulty one. Therefore, the secret of all vocal development depends upon correcting the fault or faults that may be found in the instrument. When the vocal instrument has been made perfect it will function perfectly, but not before.

The fault in most voices is purely organic, yet instructors have for ages tried to correct that unknown fault by means of speaking and singing lessons, having for their foundation breathing gymnastics, distinct pronunciation, etc. The reason such methods accomplish so little is that the vocal organs require something besides vocal exercises to make them efficient. If a person has a weak or husky voice, it is not because he speaks, sings and breathes incorrectly, but because some part of his vocal instrument is imperfect and cannot function properly. All voice training must begin with the development of the organ itself. Until this is accomplished, nothing else can be attained, and mere singing or speaking exercises become harmful.

My instructions will teach you something that has never been taught by any other method, that is, how to strengthen and build up the vocal instrument so that it can easily do the work required of it. Through using the exercises I shall give, the vocal organ can be strengthened, trained and perfected, all

weakness can be overcome and all disturbances resulting from sickness can be removed. It is to be understood that some people will obtain quick results and that others, because of the greater defects in the organ, will have to practice longer. However, even the worst cases have only to follow these instructions faithfully and persistantly to be certain of obtaining complete and permanent success. When once the vocal instrument has been completely developed, the result is always an agreeable, enduring voice, and vocal defects disappear.

HOW TO OBTAIN A CLEAR, DISTINCT VOICE

The vocal tone originates in the vocal chords (see Fig. 30) which vibrate when they are set in motion by the breath. Some chords are thin and vibrate easily and therefore give forth light tones, while others are thick and give forth strong, full tones. Usually the chords are so undeveloped and so incorrectly adjusted or so relaxed that the person singing or speaking vibrates but a part of the outer surface, instead of vibrating the entire chord. In such cases the voice is small, thin and frequently husky. Full-sized flexible chords are necessary for a full, strong voice. Fortunately there exist, in connection with the vocal chords, certain muscles which, when developed, will strengthen and enlarge the chords and give them a larger vibrating area.

To speak or sing, the vocal chords must be stretched. Loose or slack chords can emit no more sound than slack violin strings. All vocal sound depends upon the size and tension of the chords. Thick chords, while more desirable than thin chords, are naturally heavier and therefore difficult to stretch. But if one wants to emit a large or powerful sound, the

chords must be stretched. Additional strength is needed to do this stretching, and that is just what this method of exercises will supply. It controls the size of the chords and gives the necessary stretching or tensioning strength. The all-important muscles are being developed and made stronger.

Many persons possess vocal chords that are quite sufficient in size for any purpose, but their chord-stretching muscle lacks the strength to do its work. In fact, in very few persons is this muscle of sufficient strength to stretch the chords to their entire capacity. This defect is the most prevalent cause of a weak voice. It is also the cause of many throat diseases and of stammering. Therefore, the problem of all would-be singers and speakers is how to develop the power of stretching the vocal chords. These instructions solve that problem for all purposes.

To find out in what way the vocal chords are stretched we must review our study of the larynx. The vocal chords are located in the so-called thyroid cartilage, or Adam's apple, shown in Fig. 30. This cartilage rests upon the saddle-like ring cartilage (No. 4). Above the thyroid, and closely connected with it, is the hyoid or tongue bone. These three parts are closely joined during sound so that they practically resemble a continuous tube, like the three jointed parts of a flute. From these two cartilages and the hyoid bone, muscles run down to the breast and collar bones, up to the hard palate and skull, forward to the chin, and backward to the cervical spine. These muscles serve to hold the larynx in its natural position and at the same time to stretch the vocal chords. All muscles running from the larynx to other parts of the body are attached to bones which give them a firm hold; but the muscle from the hyoid

bone to the tongue has no such firm connection because it grows out of the easily-moved hyoid bone at one end into the soft tongue at the other.

Doctor Bennati, a French specialist for diseases of the throat and, in the past century, a very celebrated personality, not alone because he was the professional doctor for the Royal Italian Opera in Paris, but also because he personally treated the most celebrated singers, left behind him his experiences in a work entitled, "Rècherches sur la mècanisme de la voix humaine." In this work he complains that all voice methods have overlooked the importance of the tongue muscles. He demonstrates that when the muscle of the hyoid bone is severed, or when it is paralyzed, only a weak, dull tone can be produced. "This is no hypothesis," he says, "but a fact which I proved by many experiments on animals and in the experiences of my own private practice." He recalls the singers Mombelli, Sontag, Fodor, Tosi, David, Gentili and Rubini. "In all of these artists—and they are even now considered the exemplars of a lost art—the tongue muscles are throughout strong and active. When one lays his finger upon the spot where the muscles are attached he feels them as hard as stone. Further, one observes a noticeably large and much developed tongue in those singers whose tones are particularly big and resonant." The great singers Catalani, Lablache and Santini are given as examples. It is therefore emphatically pointed out that weak voices arise from the tongue being too dead or too weak to discharge its functions correctly.

That you may fully understand the importance of the exercises which I shall prescribe, I will again state that the purpose of each is to strengthen and build up the deficient or weak parts of the vocal organ. My

method differs from all others in that it first strengthens the weak parts by silent muscular exercises before calling on these parts to do the work of speaking or singing. That is, they are made fully able to do the work required of them before they are given the work to do. As a result the work becomes easy to do and is well done.

As you practice these instructions, symptoms or signs will appear from time to time which will prove to you that you are making definite progress. These proofs will be of such a nature that you can see, feel and hear them. You need not be told what improvement you are making, for you will know it yourself. This fact is of the greatest significance, since it raises voice training from the guesswork and uncertainty of the past into the light of exact knowledge.

THE TONGUE

If you would speak or sing correctly, you must NOT move the tongue INTENTIONALLY, but must think of it as lying loosely in the bed of the mouth. The various positions which the tongue must assume in pronouncing the vowels and consonants should be taken involuntarily.

The tongue is the most mobile member of the human body and one of the most difficult to control. For the purpose of correct speaking and singing we have, however, only to control one part, and that is the hyo-glossus muscle. But to do even this often requires time, much patience and perseverance.

THE BEAT OF THE TONGUE

If you have practiced all the previous exercises, as instructed, your tongue should be ready for the following test:

Place your little finger under the tongue in the manner previously explained and, with forefinger of the other hand, touch and stimulate the upper surface of the tongue, far back toward the throat. The hyo-glossus muscle should contract and thus form a deep groove in the tongue. When this contraction occurs it will be felt upon the little finger as a beat or sudden pressure. As soon as the tongue is relaxed it will spring away from the finger and the pressure will disappear. Repeat this test, but this time try to form the groove without the stimulation. The beat on the finger should again be felt, but it may not be as strong as before. The principal thing for you at this time is to become conscious of this beat. All the previous exercises were given for the purpose of developing this beat and the aim of all the exercises which follow will be to emphasize it. If you do not feel it, you must continue practicing the previous exercises, especially review Lesson VI, until you do. Do not attempt to practice any of the advanced exercises until you have had the desired results from the former.

THE ATTACK—CAUSE AND EFFECT

Physiologically considered, every spoken tone results because the vocal chords are brought into a vocal position and held there by the muscles which move and control them. When the tongue rests quietly on the little finger, it is felt as a soft, fleshy substance, but as soon as the groove is formed, the under surface is felt as a swelling with more or less of an elastic firmness. When this firmness is felt, it is a proof that the tongue has contracted without changing its natural position.

If the beat of the muscle takes place at the moment of enunciation, you have the positive proof that the

vocal chords are stretched. Henceforth, practice the vowels daily with the little finger under the tongue. You should always anticipate a loud tone and take care that with each vowel the tongue beats or presses slightly against the finger. You will notice that the pressure remains constant as long as the voice is held, but that it disappears the instant the voice ceases. It is advisable frequently to place the finger under the cricoid cartilage to make sure that you are not forcing the larynx up or down. Concentrate your attention more and more upon the tongue, as though every tone came from it, for it is only when the tongue is educated that a good tone can be produced. Habit plays in this, as in all things, an important role. In practicing these exercises you are forming a vocal habit, a habit that will later control you and make you use your voice correctly.

In the lesson following this one, speakers, singers, and those with defective voices, will be told how to employ in practical everyday life what we have learned so far. I am sure all of you will appreciate the great progress you have made in a short time, when you have seen the next lesson.

EXAMINATION QUESTIONS ON LESSON 13

(1) Was not emotion the original cause of language or voice?

(2) Do you see the important relation of the speaker and singer of old to the newspaper, the Government and churches of the present day?

(3) Could we have had any civilization at all without the voice?

(4) Do vocal defects arise from habit or from organic causes?

(5) Where does the voice originate?

(6) Can loose or slack vocal chords produce a good voice?

(7) What is the characteristic of the great singers considered in relation to their tongue?

(8) Should you try to move the tongue in speaking or singing?

(9) What is the correct attack?

(10) Does your voice now come "from the tongue?"

LESSON XIV

THE HISTORY OF VOICE AND VOICE METHODS—(*Continued*)

THE CHRISTIAN ERA

It was Paul, the noble carpet weaver, to whose talent for organization we owe the spread of Christianity. It was he who carried the divine teaching of his Master to all the world.

His Master, "JEHOVAH Himself in the garb of a Son of men," moved from place to place, fasted, preached, worked miracles, and at the last left only eleven Apostles and the poorest of the poor as disciples.

He countenanced the paradox that God could be crucified like a common malefactor. All seemed lost. Humanity was on the point of returning to paganism when Saul kindled his torch at the fast waning flame of the discouraged followers of the Divine Master. He went out to the heathen and preached with "tongues of fire," with the spoken and written word, until he could no longer count all the poor in heart, all the heavy laden, all those who had nothing to hope for. The blind and the lame, the deaf and the dumb, all who were despised and persecuted, became his church. His followers were fishermen, slaves, and outcasts; all of them came and believed.

The "sectarians" aroused antagonism. They were thrown to wild beasts, covered with pitch to make human torches and in the end, instead of being exterminated, these idealistic "theorists" succeeded in establishing a new religion. The destroying dreamers and unpractical "theorists" changed into martyrs and believers who transformed an entire world.

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These believers gradually organized themselves. The different communities or churches chose as presbyters, men of experience and moral worth. In secluded, secret places they met to pray and to praise God in song, as witness the following quotations:

Fig. 92

St. Mark and St. Paul—Durer.

Paul, writing to the Ephesians, 5: 19: "Speaking to yourselves in psalms and hymns and spiritual songs, singing and making melody in your heart to the Lord."

Epistle of James, 5: 13: "Is any among you afflicted? Let him pray. Is any merry? Let him sing psalms."

St. Matthew, 26: 30: "And when they had sung a hymn, they went out into the mount of Olives."

It is plain from this that the music of the early Christian church was Hebrew, but as the churches at Corinth, Ephesus, Thessalonica, Galatia, etc., were Greek, the Greek music and the Hebrew music amalgamated and were thus accepted in the church at Rome, which became the central Christian church.

The great and sincere spirituality of the early Christians, those simple, self-sacrificing and pious persons who gladly laid down their lives for an ideal, introduced a new power, the greatest of all powers, "humility." Their music must have been of great simplicity, but deep, tender feeling. Nothing is left to us of their melodies, which must have been mostly sad. Only when they sang of the "Bride of Christ," some joyful and jubilant strains may have brightened the usually somber hymns.

St. Augustine tells us that in the church of Alexandria the psalms were sung on an almost uniform pitch, so that they were spoken rather than sung. It is also related that Bishop Ignatius had a dream in which he saw Christ on his throne, surrounded by the heavenly host, but the angels sang not together, but separately in groups. This made such an impression on him that he introduced group singing in the churches. Out of this grew the antiphonal style of singing still in use.

As early as the fourth century, schools were established to train singers for the churches, and to introduce a uniform system of singing in all the churches. Now, for the first time, appears a system of writing and preserving the melodies in use. This system, "Neuma," resembles our modern shorthand system. Only the pitch could be fixed by this system, without taking into account the time and duration of the notes. Pope Gregory (7-8 century), who called himself a "Servant of Servants," was in reality a master of masters. He enlarged the musical system and
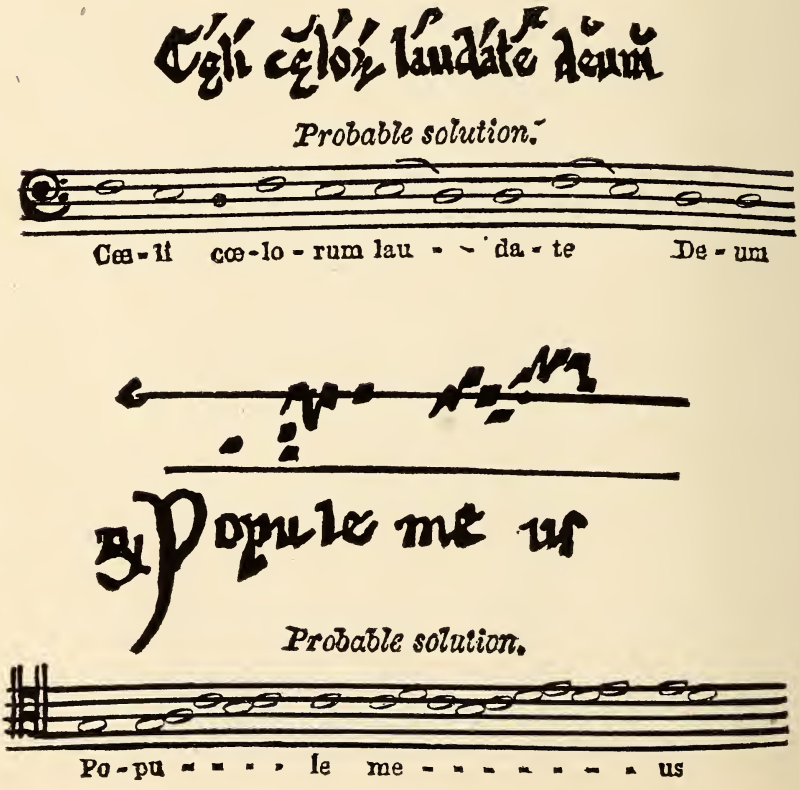
Fig. 93

Musical Notation in the Fourth Century.

reformed some abuses which had crept into the community singing. He introduced the choir. His music was especially designed for the priest and the singers who formed a "corona" or half circle around the altar.

The melodies moved in slow measure, dignified and austere. He designated and himself composed melodies which must be sung to a certain prescribed text, thereby introducing ritualistic singing. These melodies and the text to which alone they must be sung, were written and bound in a book which was fastened by a chain to the altar at the church of St. Peter in Rome.

This period might be called the musical reformation. It has had a far-reaching influence down to our own day. Gregory enlarged the schools. Special training was now given to boys, and this training included all the then known elements of education. The Christian religion alone was too austere, too serious to succeed quickly in converting the world. Necessary, at least in the early periods, was a certain amount of pomp and grandeur, such as the Romans had used to subdue the world to their power. Added to this pomp and show, music became one of the great attractions.

The magnificently decorated churches, the soft and colorful light, the impressive tones of the organ and the highly-trained voices of the choirs turned crude hearts to spiritual things and paved the way for an astonishingly rapid spread of the religion of Christ. Men could not at once accept the purely spiritual ideals of truth. They needed visible, material things to arouse their inner consciousness, and music is among the strongest factors in arousing the senses.

The civilizing influence of the church, as we see, was greatly assisted at that time by music. This would be just as true today, had not the church

Fig. 94

Transfiguration—Raphael.

largely lost the leadership it once had; it therefore remains to the individual himself to utilize the lesson of art for his own comfort and development.

When the great emperor Charlemagne was in Rome, he was so deeply impressed with the music there that he determined to establish music schools in Germany. The Pope sent him teachers, who traveled over Charlemagne's dominions, and by their efforts quickly established the spiritual power of music in the churches.

About the ninth century, a monk, "Huckbald" by name, improved the system of note writing by using letters instead of signs as heretofore. In the tenth century another monk, Guido, of Arezzo, improved the note system still more and it became possible

Fig. 95

Charlemagne—Durer.

to leave definite records of the melodies and hymns then in use.

I have in my possession some of the old tunes, dating back to the eighth century. Among the illustrations you will find a record of the oldest styles of writing music. Compare it with the modern style and you will realize the vast advance humanity has made.

The Germans, the French and the English, to whom this new art was brought, were not musical. Those who were sent to teach them despised these crude barbarians whose voices, they said, were like the rolling of cartwheels on a stony road. Their drunkenness and rude manners were an offense to their Roman teachers, accustomed to a high state of civilization. Our forefathers were good fighters and good drinkers, but poor singers. None the less the glory that was Rome's has long since departed to make room for the civilization of the then despised barbarians.

Hitherto, and up to the tenth century, all music, whether singing or instrumental, was in unison; that is, even choruses sang only the melody of one single voice; not even the Greeks seem to have felt the monotony of such music.

The evolution of humanity proceeds by very slow degrees. Centuries pass and man is seemingly the same as he was in the beginning. The Greek tragedies, as compared with Shakespeare's "Hamlet" or Goethe's "Faust," are exceedingly simple. So is the music of the past, as compared to the music of modern times, childishly simple.

England first perceived the monotony of homophonic or one-voice music. Gradually attempts at adding other voices and melodies gained ground. The first change made was simply the addition of an octave

to the melody. Later the fifth of the tonic and, about the thirteenth century, the third tone of the tonic were added by German writers. The Netherlands and France dominated the evolution of music up to the time of the Reformation.

The cultured portions of China and of India, together with the peoples around the Mediterranean, did their best to carry civilization forward.

Fig. 96

Germans Crossing the Rhine—Fourth Century.

Meanwhile, the barbarian Celtic and Germanic peoples, vegetating in their swamps and forests, no doubt were satisfied with the world as they found it. Existence was simple. Forests and rivers furnished food in plenty. The land was free for their cattle. Neither assessor nor gasman made himself feared. Suddenly the southern races invaded their countries, and changed conditions followed this invasion. New ideas and new ambitions were kindled in the heart of the northern man and perhaps more so in the heart of

the northern woman. While repelling the invaders they were conquered themselves, since their old, simple, natural style of living gave way to the more complicated and ambitious practices of the southern people.

In his endeavors to eject the foreigner, and later on from a desire for wealth and lust of conquest, he in time invaded the southern countries.

With elemental powers of destruction these northern people overran the classic countries of Greece and Rome. While they worked immeasurable harm to the

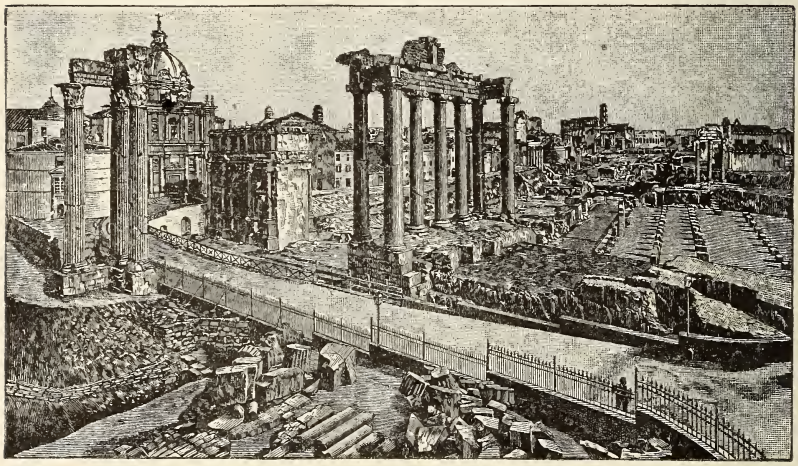

Fig. 97

Roman Forum.

art of that period they finally established a newer, broader and better civilization. They introduced a measure of truth and moral sincerity which had been lacking in the antecedent periods.

The classic period of Greece and Rome, beautiful and elevated as it was, lacked spiritual qualities and therefore was not strong enough to withstand the assault of the barbarian hordes. The elements which

the Celtic and Germanic peoples added to those of the south were needed for a broader and more lasting evolution of the human race.

EXERCISES TO LESSON XIV

The remarks and exercises which follow are for the speaker, singer and those with defective voices. These exercises are of the utmost importance and should be carefully and frequently studied. You will get most convincing proof not only of the correctness of my method, but also of its "infallibility." I am emphasizing this not from a sense of boastfulness, but to encourage you—to make you feel that you are on an absolutely straight road.

Of necessity some of my students must battle for victory. That is, they must practice hard for final and complete success. This they can do only when they are convinced that the method which I give them will really bring results. I am trying to teach you not only my method, but the genesis of the method; and to this end I want to shed light on the subject from many angles so that you may see as clearly as I do.

Very few public speakers have what the public speaker needs first of all, and, in many cases, most of all—a good speaking voice, a suitable and adequate voice for public speaking. A few, a **very** few have such a voice by nature and, even where Nature confers the blessing of a voice of adequate strength, she seldom adds the desirable flexibility or modulation. So, whether it be a stronger voice or a more manageable one that the speaker needs, his only method of acquiring it is to use his will power and, with the help of my exercises, to develop the needed flexibility.

While even those whose voices are naturally strong need to study how to modulate them and make them flexible, there are vastly more whose voices are not **nearly** strong enough for purposes of public speaking. These, of course, must practice and continue to practice, often for a very long period.

The main and final exercise for strengthening the voice has not yet been given to you. It will be given when you are ready to understand and accept it. That last and final exercise will develop a strength of voice such as you have never dreamed of as being possible in your own case.

Then there is that large unfortunate class of persons who stammer or lisp, or who have other vocal impediments. To them, my exercises are a matter of life or death. I have personally taught some of these individuals and in **every** case they responded to the exercise with surprising speed. That is, so long as they consciously talked "out of the tongue" as I call it, which physiologically considered, means by the activity of the hyo-glossi muscle, they not only did not stammer, but they **could not** stammer.

I remember the case of a high-school student who stammered very badly. After a short period, I asked him to bring his father and mother along. When they came, I had him count quickly up to one thousand, and afterward read several pages. Would you believe that neither his father nor mother could count or read in as good a voice as he and not nearly as rapidly, though their normal speech was good?

Bear in mind the further fact that his voice was much stronger and better than theirs, just as long as he observed the one little thing which you have been taught so far; that is, that each tone must be produced with the "beat of the tongue."

His stammering, and it was very pronounced, appeared after some illness in childhood. Of course he had tried methods of cure and schools for stammerers. His tongue, like that of most stammerers, was drawn back from the teeth and up toward the roof of the mouth, and there held rigid and hard. In this position the hyo-glossi muscle could not contract. It was bound and held immovable by the extreme contraction of the jaw and chin muscles.

The stammerer's case is identical with the harsh voice of the speaker and singer, only his case is more aggravated than theirs. In all three cases, the jaw muscles interfere and make impossible the correct action of the hyo-glossi muscles.

Now, to many it will seem that the cure would consist in relaxing the jaw and chin muscles, but this is not the case. If you were to try this, and provided you succeeded in relaxing the jaw and chin muscles, you would at the same time relax the important, legitimate tongue muscles also, and your later case would be worse than the first, for instead of having a loud and harsh voice, you would have, at best, a weak and husky voice. The reasons for this will be explained in the lessons on "Interfering Muscles." To explain this now would merely confuse you.

The person with a weak voice is in some ways worse off than either of the other three, because a weak voice indicates weak tongue muscles and it takes much time to make these muscles strong. But in another sense, the weak voice does not have to unlearn and overcome habits of wrong speech, of stiffening, as do harsh voices and stammerers. The weak voice merely needs to strengthen the weak muscles and is all right ever after.

What I have said about the speaker applies just as strongly to the singer. The singer, of course, does

not stammer, but many singers' voices are hard and harsh, or shrill, and for the same reason. They also use their jaw and chin muscles, often to the exclusion of the only muscles which really produce a sweet voice. For this reason the training of the speaker and of the singer is identical. The singer must first apply his knowledge of voice to speaking. Incidentally this will help his diction in singing. His enunciation will be as distinct in singing as it is in speaking. The singer and speaker part company only when it comes to the matter of range. The speaker needs but a small range; the singer must have a compass of at least two octaves. Both speaker and singer must be able to modulate from loud to soft, but the singer needs some special effects, such as the Italian Bel Canto, or legato singing, the staccato, martellato, portamento, swelling and decreasing the same tone, echo effects, trills and rapid runs, etc. All these and other points will be thoroughly covered in the course of these lessons, but for the purpose of purely vocal development all classes of vocalists go together.

If you have acquired false habits of speaking and singing, do not think that you can at once eliminate them. Therefore, if your jaws are stiff, or if you feel any tightness in the chest or abdomen, for the present pay no attention to that, but concentrate all your efforts, all your attention, upon acquiring a flexible tongue.

You are being taught a positive "do" and not a negative "don't."

When you know the right way, when you have learned the right direction, you will gradually eliminate wrong habits and forget them.

I assume that you have by this time mastered the tongue; that you can make the groove with utmost

ease, without moving either the palate or the larynx.

Have you noticed two special points?

4 The first is, that when you make the groove correctly, your throat feels "open," free, and loose.

The second point is, that when you place the little finger under one side of the tongue and make the groove, you feel a distinct pressing downward of the tongue upon the finger.

I call this pressure "beat," somewhat like a heart beat. This "beat" (this pressure on the finger) as the groove is made, is the physiological **"Cause of Every Tone"** whether you speak or sing. Without this beat no good tone or voice is **ever possible.** It is like the tick or tapping of a telegraph instrument, each tap releases a current, each tongue beat releases a tone. When the tongue beat is lacking, the tone is inferior or even bad. The beat is the cause of good tone. The absence of the beat has as its consequence a poor tone.

This is absolute and final! Never forget this!

Now take your mirror and torch. Place the little finger, as taught, under the tongue. Make sure that your finger lies **directly** in line with the string of the tongue; that is, in the center. Make the groove three times, and notice the "beat." If any of you do not feel the beat distinctly and rather strongly, you should continue to stimulate the back of the tongue with the tickler. When the rear part makes the groove, the front part of the tongue will press (beat) upon the finger.

5 Now, in your most natural voice **call** out "one," "two," "three," etc., up to ten. Many of you will feel the beat on every count, some only on a few counts, usually on three, six and eight. A few may get no beat at all. Be sure you speak loudly.

Three causes may contribute to the non-success with the beat. The first cause is that the groove is not being made in the extreme rear of the tongue.

The second cause is that in a few persons the tongue is very, very weak; so weak in fact that the contraction of the muscles cannot be felt at all.

The third cause, and one nearly always found in stammerers, is that the tongue and throat are held extremely rigid and unyielding.

Those who get a beat all the time, or most of the time, should have a very fine, even splendid, voice in a year. If they have not, they won't get any sympathy from me, for they have a **most wonderful** start.

Those with very weak muscles naturally require more time to bring out the voice, but they can **absolutely** rely on a fine voice if they keep up the final practice, which will come later in the course. I can positively assure them, because I myself was perhaps the weakest among the weak, and I now equal in volume and quality almost any orator and many singers.

I remember the case of a Catholic priest who came to me from a Sanitarium in Denmark. He could barely whisper. Today he is strong, healthy and a prominent speaker.

Along with his numerous duties, he kept up the practice, **just** as you are being taught. Another came from the extreme border of Poland, one from the so-called "Sourland" of Germany. These three were extremely bad cases and they are now in splendid voice. I have had many teachers, railroad men, salesmen, army officers; all of them succeeded beyond their dreams.

Right here in Chicago, within a year, there are many whose voices were not "restored," as they never

had much of a voice, but who were **given** a voice such as they had never dared to hope for.

Persons affected by the third cause, seemingly the worst of all, are, as regards strength, often the best of all! I have found stammerers who were, unknown to themselves, "diamonds." To be sure "diamonds in the rough," needing lots of cutting, but still diamonds. I don't say they were musical, but merely that they had hidden within themselves a great voice. Such voices are buried in slack and rubble, sometimes mountain high, but they are there!

So far as my experience reaches, most of the stammerers had a very strong hyo-glossi muscle, to speak technically, but through accident, illness, sometimes misdirected teaching, or at least through ignorance of the correct voice attack, had lost all proper use of the true voice-producing parts of their throats. Mostly, they held their tongues very rigid. The palate is drawn up and the jaw muscles are stiff. Of course any kind of speech is almost impossible under such conditions.

It is related that when the Persians invaded Lydia, soldiers burst into the palace of King Croesus. The only son of Croesus was dumb, but when he saw the invaders, the fear for his father's life produced such an excitement within him that "he broke the string of his tongue" and called to the invaders, "Spare the king."

Now, what must have happened was not that he broke the string of the tongue, but that he got "hold of it." For the first time in his life, he controlled the all-essential voice-producing tongue muscles and from then on he could speak.

The fact that stammerers often can sing well is a positive proof that they are normal, even better

equipped than many persons who do not stammer. If they could control the tongue while speaking, as they do in singing, they would never stammer. Therefore the stammerers and all those with speech defects, must study and work to gain the absolute control of their tongue muscles, just the same as the speakers and singers.

The exercises for the present must be the same for all classes. Special exercises for speakers, singers and defective voices will be given as we go along, but in the essential parts, all cases are alike, for everything depends on the control and strength of the hyo-glossi muscles. This statement must be repeated over and over again. All other exercises which you will be given are secondary to those dealing with the hyo-glossi.

Again place the little finger under the tongue, as taught; now repeat first all the vowel sounds, later the entire alphabet, as distinctly as you can.

Special exercises for vowels and consonants will follow as we go along with our lessons. For the present merely general directions can and need be given.

As long as you speak loudly, in an ordinarily loud tone, as if you were speaking to a friend across the room, the beat must be distinctly felt; whether you speak vowels or consonants, it is all the same. But if you do not speak loudly, the beat will be felt very faintly or not at all.

When the hyo-glossi muscle contracts strongly, you always obtain a strong, full tone, which is free and musical.

When the hyo-glossi muscle contracts but little, or not at all, your voice is faint, husky or breathy. The following little nonsense verse is very well adapted for

a lesson in vocal attack. If you don't like **this** verse, use some other with short, sharp sentences.

IRREDENTA

Shoes that squeak, a banging door,
A man too meek, a perfect score;
A stickless stamp, a derby hat,
A solemn scamp, a lady cat;
A lover bold who tells the truth,
A woman cold to life and youth;
A mission chair, a wrinkled rug,
Denatured hair, a pin scratch hug;
A pretty man, a mannish maid,
A city plan, a bill unpaid;
A mended sock, a postered wall—
Into the discard with them all!

As before, place little finger under the tongue and read aloud. Read slowly, and for a few trials, separate the words. Be especially careful to pronounce each vowel or consonant clearly and distinctly, and be **twice** as careful to **end** the word just as distinctly as you began it. For instance, read the first line as if it were written thus:

Sh'oe's—th'a't—squ-ea'k—a—bang'ingh'—doo-r,

Read the entire verse almost as if you were spelling each word, the consonants somewhat separated from the vowels. Observe carefully that the tongue slightly beats or bears down on the finger below it. In the consonants the bearing down will be a little less strong than in the vowels. Notice that the bearing down, or beat, continues while you speak. There is no separate beat for each vowel or consonant. The initial beat for the starting sound carries you to the end of a word or when you speak normally, to an entire sentence. As long as you speak, the bearing down must be pres-

ent. During rest, breath or pause, the tongue relaxes; that is, there is then no beat.

Gradually read this verse, in a normal way, but be **sure** to enunciate every syllable very distinctly, especially the end syllable. Singers will find this also very valuable. Such a preparation will insure anyone being understood by the last man in the uppermost gallery of any large hall.

Now, a very important point to all of you!

CULTIVATE AN EAR FOR YOUR OWN VOICE

You are invariably, not occasionally, but **invariably** to use the strongest tone you can make **with ease.** Converse in it, joke in it, think in it. This is not an occasional exercise, but a continual performance. You must arouse your intellect, your will power to demand a strong, full voice, always and at all times. Every faculty, the understanding, the reflective, the perceptive and every other faculty must co-operate.

This new voice is like a new language. It necessitates thought, concentration, and continuity and, like every new language, can only be learned if you converse in it or speak in public with it, talk in it incessantly.

Every individual talks in some main, permanent pitch. Gradually find out which pitch is your own.

Observe as you read aloud or converse with your friends or address an audience or a jury, that your pitch varies from low to high, but that there is one pitch on which you can talk easier than on any other. **That is your standard pitch.** Accustom yourself to talk mainly in that pitch. Train your ear for that pitch. If you have a piano, find out by striking the key and speaking at the same time—not singing the words, but speaking them—you will find that big, heavy voices usually speak around "E flat," first line,

lighter voices somewhat near "F," first space. When you have determined the pitch that is easiest to you, hold on to it. It is your own individual voice pitch. In it you will make the most rapid progress. In that pitch you will be your own self more than in any other.

I have given you a rather long lesson, but not nearly long enough. You have arrived at one of the most important stages of our course of study. You will, I am sure, readily appreciate the great practical value of this lesson. Digest it. Ponder over it. Make it your own. This lesson opens the portals to a wide vision of vocal success. Prepare yourself for the greater lessons that are yet to come, by mastering this one entirely.

For several months, practice some daily speaking, with little finger under the tongue and make sure you get the beat on every loudly spoken word.

EXAMINATION QUESTIONS ON LESSON XIV

(1) Had the voice any part in the success of Christianity?

(2) If you stammer, can you now see the cause of your defect?

(3) If your voice is weak, or harsh, do you see why?

(4) Is your throat open when you make the groove?

(5) Is the throat open (that is, free and relaxed) when you speak with the beat?

(6) Is your tongue beat strong, medium or weak?

(7) On what counts do you feel the beat?

(8) Can you read aloud the verse "Irredenta" and how do you succeed?

(9) Have you found the pitch of your own voice?

(10) On what consonants or vowels do you stammer most?

LESSON XV

HISTORY OF VOICE AND VOICE METHODS

(Continued)

From the Reformation to the Present

"Human happiness has no perfect security but freedom, freedom none but virtue, virtue none but knowledge, and neither has any vigor or immortal hope, except in the principles of the Christian faith;" so wrote Josiah Quincy, of Boston, on September 17, 1830.

The North American Indian has nearly disappeared because he had not the capacity to develop himself. He inherited a magnificent land, but he had nothing to contribute, either in material wealth or in spiritual progress. He is gone, not because he was conquered, but because he was lacking in the elements that make men strong to resist.

Persia, Greece and Rome all had made material progress that has been the wonder and envy of subsequent ages, but they were deficient in spirituality, in moral qualities without which no permanent progress is possible, without which no nation can continue to exist.

Among the things of the spirit are the arts, and of these it is music which more than any other expresses the inner worth and thought of man. Music is the last of all the arts, because it demands a greater human development than any other. Man needed the material things first. From the useful he progressed to a higher idea, the beautiful, and at last he finds the highest ideal of beauty within himself. The realization of this high ideal within himself will not only make a man more happy, but also more useful to himself and to others. He has gone through a "fire" and has become refined. From crude ore he has been changed to pure and rich metal. It took thousands of centuries to bring man-

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kind thus far. **Now** anyone may advance in a few years beyond an entire era of former times and one **man** is worth more than were hundreds formerly.

Fig. 98

Moses—Michael Angelo.

The past has shown us that man is, mentally at least, a rather lazy subject. If it were not so, humanity would have advanced much faster. Electricity and steam have

existed from the creation of the world, but not until the American, Benjamin Franklin, harnessed electricity and the Scotchman, Stevenson, made use of steam power, were they of service to mankind. Up to the time of the German, Guttenberg, books used to be reproduced by the slow process of writing. Now a printing press can do in one hour what a thousand men could then do in a year.

It required revolutions and wars to awaken the slumbering intelligence of humanity.

But as soon as a nation or a race made a step forward, reaction set in, striving to delay the march toward a higher ideal. The introduction of Christianity was the most important advance since the time of Moses, but that which befel the religion of Moses also befel Christianity. Elements appeared that set it back.

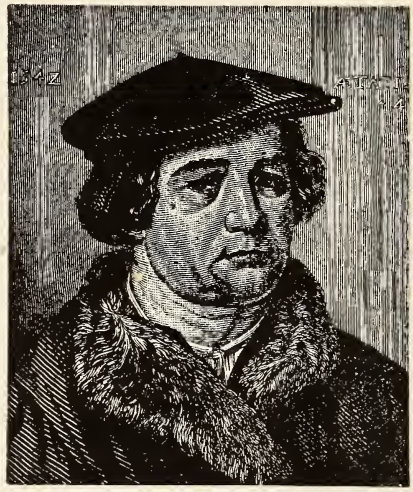
The democratic tendency of the reformation introduced the singing of chorals and songs in the language of the particular country in which they were sung. This had not been the case previously as songs had been sung in the Latin tongue which was unknown to the masses. Much that was beautiful and sweet in the old church disappeared to make room for the more austere and coldly aloof. Much was gained, but much also was lost. We realize that fact today.

The new religion became dominant among all the northern nations. The nations of the south were little inclined to accept it.

The period of classic music started with the end of the 17th century. In philosophy we recognize Plato and Kant; in poetry, Shakespeare and Goethe, and in music, Bach and Beethoven, as the highest types.

The old forms of music found their sublimest expression in what is known as Plain Chant. It formed the

basis for all other forms of church music, polyphonic, choral as well as the more ornate forms. It is the highest form of music, ancient or modern, for it never can become archaic or antiquated. It forms the vehicle



MARTIN LUTHER.
Fig. 99

by which the sublime truths of Christianity are impressed upon us.

From the time of the Reformation, there was a departure from this sublime liturgic expression of music, and the choral took its place as the music of the Christian church. This was due to the fact that congregational singing was more and more encouraged through the sublime chorals of John Sebastian Bach. Bach appeared to give modern figured music an impetus, which is more strongly felt today than at any time since his death in 1750. He appreciated the beauty of the Italian and French schools, and, in fact, made use of the motives of Plain Chant in the composition of his chorals. In addition he devoted the power of his giant intellect to completing the mighty archi-

tectural structure of modern, figured music. His most beautiful chorals are constructed on Plain Chant motives.

That Bach was far ahead of his time may be seen from a letter of censure addressed to him by the church

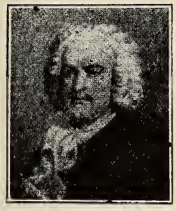


Fig. 100
Bach.

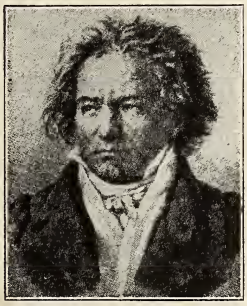


Fig. 101
Beethoven.

where he was organist. In it he was reproved for introducing so many innovations and such foreign tones into his music that the people became confused and unable to follow it. His life was full of worries. He married twice, had twenty children and an income of less than $600. This was cut down considerably, he wrote to a friend, when, on account of a favorable winter, there were fewer funerals to play for. It seems almost a divine law, that heavenly inspiration must be paid for by terrestrial suffering.

If ever God talked to man in tones, Palestrina, Bach and Beethoven were those men. Beethoven's contribution to music is a depth of feeling and grandeur that surpasses the finite and becomes infinite.

The classic period of music ends about 1800. It is followed by the romantic period. The classic period may be termed the aristocratic period. Law and order, system and proportion, a logical, intellectual evolution

gave way to a new style, not so grand as the classic, but very interesting. It may be compared to the liberal school of politics and literature which had its rise in the French revolution.

The romantic period has already passed its zenith. A new world is now opening before us. It is the period of science and of exact knowledge. The people who send telegrams across the oceans, who have conquered the air, who measure and divide atoms, who by means of X-Rays see hidden mysteries, who ring up a friend thousands of miles away and talk to him as if he were in a chair opposite to them; those people will presently discover new forms and new elements to express themselves in music. We must wait.

So much is sure—that faith in God, in a future life, is stronger and more certain today than at any time in the world's history. It must be forever the highest office to teach men to find God in their own hearts, to assist the unfortunate, to raise the fallen and to encourage the weak. As long as we are bound to the earth, we have need of faith and of the things which speak to the heart and lift us beyond material worries and perplexities. Beauty in all forms is one of the means which lift us upward, and music will remain one of the strongest mediums to remind us that the spark within us is part of an infinite spirit.

Up to about the 15th century, singing was mainly confined to religious ceremonies. In the early ages of Christianity, the Gregorian Chant, which was regarded by all as a prayer, a communing with God, found its place only within the sacred precincts of the church. With the advent of Palestrina and polyphonic music, modern, figured music itself took on a sacred character, and the art of music still remained to a great degree a church art, a religious art. With the time of Bach and

the choral, the art of music seems to have finished its course as a religious art. The Chant, polyphony and the choral were decidedly and intrinsically religious. Today in most of our churches, the sublime Gregorian Chant, the polyphony of Palestrina and the other composers of his time, the solemn choral of Bach, are no longer heard. Worldly music and sentimental tunes have usurped their place. Up to the time of the Reformation, all liturgic music was conducted in the Latin tongue, while non-liturgic music was conducted in the particular language of the country. Although liturgic music was confined to the Latin text, yet this text was sung by all the people who from childhood knew perfectly well the meaning of the text. As many of the Christian churches now are non-liturgic, we find that the singing is in the vernacular. As a result of departing from the serious chant, polyphony and choral, church music today takes on the character of the music heard in the theatre and concert hall.

Now, using our native languages, the text and the music treat of love, kisses, wine. The smile of a sweetheart is more important than forgiveness of sin. Her blue eyes are more enticing than all the bliss of heaven. Formerly singers traveled in the then known parts of the world. The Roman legions sang as they conquered the nations, to be themselves defeated as the ancient Germans and Gauls invaded Rome, singing their battle songs. When the wars ended, many preferred to earn a precarious, but amusing existence by journeying from court to court, singing and dancing, or by the display of all sorts of tricks and arts. These individuals became the bards of the Celts, the jongleurs of Gaul, the "vagrants" of all the world, high-brow progenitors of our present-day tramp.

A few of them, specially gifted, were permanently engaged by some prince or city, to supply the festivities with the necessary laughter, to praise the prince or the town authorities to the highest heaven, to rail and mock against their enemies, etc.

These were the real predecessors of the later day court poet or the present day "after dinner" speaker. Besides being gifted with a crude sort of wit, they needed a good voice. It is on record that their wit was often of poor quality, but they made up for that by superior voices.

Out of this mixture of pagan and Christian motives, Greek culture, Celtic and Germanic barbarism, a gentle, new and beautiful flower was born. It is the "Folk-Song."

With the introduction of the printing press, the text and music of these songs spread quickly. The first book or collection of songs was published in 1490.

At a very early time in the Christian era, Easter, Passion and Mystery plays were enacted by the priests and monks. In the 12th century, the traveling minstrels adopted these also, and in this wise founded the modern theater and opera. The Thirty Years War of the reformation destroyed what former centuries had contributed in the way of art, poetry and music. A sad time came over the world. At a period when murder, rape and fire became the main business of life, art and song, which are the children of peace and culture, were forgotten. The modern ideas of socialism, communism, and anarchism, have not contributed any thing to the development of folk-song. What we still hear of that is not new, but merely dreams of the past.

In France the folk-songs were gradually divided into two distinct classes. One class for the city, which meant Paris, the other for the country, or "voix de ville," the vaudeville of our day.

England possessed the most developed and distinct folk-songs. Part singing was known there long before any other country.

To us it seems inconceivable that there was a time, not so many centuries ago either, when there were no

Fig. 102

The Juggler of Notre Dame.

books, when the virgin mind was a blank; when the mere details of everyday life, eating, drinking, sleep, and work in the field or kitchen, were the events of the day. To the knight in his solitary castle and still more to his women folk, life presented one monotonous round of uneventful existence, broken now and then by hunting, fishing and occasionally by a feud with some other

knight, just to pass the time. When in the long winter days, the landscape covered with an even sheet of snow, yawning solitude, an eternal nothing stretched before the castle with the prospect that tomorrow and the days to follow would be like today, the watchman in the tower blew the horn and announced a visitor, with what eagerness this visitor was received! And if he should happen to be a minstrel, he was made more than welcome. He came from the outside, he had traveled far in foreign countries, at courts; he could tell of wars, of gossip here and there. What wonder that he was urged to stay days and weeks. His stories, his songs, even his arrogance and boldness were a re-

Fig. 103

A Knight in Full Armor.

freshing break in the monotonous existence. He was the newspaper of that age. Not even the merchant with his wares from Venice, spices from India, linen from Flanders, carpets and silks from the Orient, stood in such high regard as the minstrel. For him the best room, the richest victuals and the greatest reward; for if he was liked, he also was feared. His tongue was always sharp and his conscience not over-scrupulous. If he were not treated and rewarded to his liking, he would make fun of one. He would sing a "bad song" about one. Yellow journalism was known and feared even then!

Knighthood, once defender of the faith, the hope of the oppressed, the fear of the wrongdoer, fell from its high estate. The great and the little lords in turn became the oppressors, the assassins and thieves. Anarchy reigned. No one was master. In this time of lawlessness the citizens of the towns banded together for mutual defense against the predatory knight. The knights and barons turned bandits. The towns were surrounded with strong fortifications, and guards kept watch at the gates. Outside these towns there was robbery and lawlessness. Within the walls there was peace and prosperity. The merchant and the mechanic, the baker and the butcher, the carpenter, the smith, the weaver, the tailor, and the shoemaker, all joined together in a harmonious community. And at their guild meetings, verses and music helped to amuse and to improve the mind.

In this happy atmosphere were born the German master-singers, whose poetic flower was Hans Sachs, a shoemaker of Nuremberg. Only a master craftsman was admitted to this fellowship. He had to pass a severe examination in many things, but chiefly in his literary and musical qualifications, and his ability to form verses in conformity with strict rules.

Verse and music had to be original, so while the tailor sewed or the carpenter worked, he thought at the same time about some story which could be maed into verse and set to music. Prizes were distributed to the chief master-singers from time to time, and these rewards proved a great stimulant to search for new subjects which could be turned into verse. Their sources of study were ancient and modern history, the Bible, politics and nature. It was a kind of Chautauqua course of and for the artisans of the 16th and 17th centuries. These men had their work to do. They liked the work. They were satisfied and happy. They did not try to force their opinions on the rest of the world. All they wanted was the opportunity to carry on their own business in peace. When they met of evenings, it was not to discourse upon politics, the tariff, votes for women or some Utopian scheme of converting wolves into lambs; it was to improve their minds. They refreshed themselves after their daily labor by taking up some subject that appealed to them as beautiful and worth while.

Though machinery was practically unknown in those days, yet the art of the locksmith, the tailor, the goldsmith, the carpenter, etc., was far superior to that of our present day. Their furniture, dress designs and workmanship in crafts of all kinds, such as porcelains, medallions, weaving, linen, are types of perfection which we merely copy today. Rather poor in externals, their inner individual soul life was richer than that of their successors has been.

The masses had a sense of beauty, symmetry and proportion now found only in a comparatively small number of highly cultured persons. In comfort and knowledge they were poorer than people of today, but the individual was richer and certainly more contented.

EXERCISES FOR LESSON XV
THE ATTACK *(Continued)*

Many persons find it extremely difficult to form the groove in the tongue. Every means must be tried to induce the contraction of the hyo-glossi muscles which make the groove. Those of you who now make the groove with ease, will still find it profitable to try the following experiment:

First take a little sip of water, then close the mouth and swallow. Notice most carefully whether you feel a little contraction in the extreme rear part of the tongue. Repeat several times.

When you notice or feel the easy but distinct contraction in the tongue, then notice at the same time that your throat feels open, loose or hollow. As you swallow again and again, notice gradually that the contraction of the tongue and the hollow throat occur at the same instant; that is, the contraction of the tongue also caused the hollow, open throat. If cold water does not induce the contraction of the tongue, take hot coffee or tea, real hot, but only a sip at any one time.

As a progressive step, do this: Take a sip, then place your forefinger inside the mouth as far back as you can reach. Place the forefinger directly but gently upon the tongue, as far back as you can. Close your mouth now and swallow. Repeat this until you can distinctly feel that the tongue sinks in the middle, especially far back; that it also feels loose and the throat hollow. Keep on trying till you get this. When the tongue grooves with the swallow, then try without swallowing.

Now try still another experiment, that of sucking. Place forefinger way back on the tongue, close your mouth and think of swallowing or sucking your finger.

Try every means of inducing the tongue to contract, by tickling with the tongue depressor, or by swallowing water, or by sucking the finger, as may suit you best; then try and make the groove without that stimulating effort.

GROOVE WITH LITTLE FINGER

Again place the little finger under the tongue. Make the groove and notice the beat of the tongue on the finger. Make sure, and this is **especially important for singers,** that the lowest part of the larynx, the cricoid cartilage, does not move while you make the groove.

As a further illustration of the "beat," try the following: Stand erect, with your knees or only one knee pressed stiffly backward. Notice the tension in the knee. Hold for three counts, then at "four," suddenly give way at the knee, not much, just enough to notice a break or sudden relaxing or giving away at the knee. This break illustrates the beat of the tongue very distinctly and can be easily made by anyone. Then place finger under the tongue, hold the tongue for three counts, then at "four," suddenly let go of the tongue; that is, break the tongue as you did with the knee, and notice now that the beat is very clear and distinct.

As a specific illustration of the physical cause and process of an exact vocal attack for everybody, speaker, singer and stammerer, get a rubber ball or atomizer. A small rubber ball will do nicely. Close your fingers around the ball and squeeze it several times. Notice the slight effort of your hand as you squeeze the ball and the relaxing of the hand as you let go.

Now, at count "one," suddenly, but in the easiest possible way, close hard and squeeze!

Hold for count "two" and "three."

Let go at count "four!" Repeat several times! Observe two distinct actions as you play with the ball. One is the action of closing the hands; this is the contraction. The other action is when you release the ball, as you open your hand; this is relaxation!

After every contraction there must be a relaxation! Repeat the ball experiment till you get a clear picture of two distinct movements. As your hands contract, notice that the contraction is sudden, but not violent; quick, but free and easy.

While you hold the ball contracted, you will notice a certain amount of easy tension in your hands, and as you let go, or relax your hand, this tension disappears instantly. Now squeeze the ball in rapid succession; notice that you can do this so quickly that the contraction and relaxation almost occur at the same time. This is exactly what happens with the tongue and all the muscles of the entire vocal organ, as long as you speak or sing. Between words, between musical phrases, or between staccato notes, there is a relaxation of all the vocal muscles. If there were no relaxing, the tone would take the nature of the muscles. It would be hard and stiff like them.

Three things must be remembered as needful for a correct vocal attack. They are:

Suddenness, Strength and **Ease.**

Suddenness. Because that is the way all muscles contract; instantly, without the slightest hesitation.

Strength. When the muscles contract suddenly and with the utmost freedom they are at their maximum strength, therefore the tone is strong.

Ease. When the muscles contract without forcing, with the utmost ease, then you feel free, loose and comfortable, in spite or because of the fact that the muscles are powerfully contracted.

These three things are the essentials of all good vocal attack. These three principles, strictly observed, will place you in the position of doing very good work, even with the voice you now have; and even when you have finished the work which I prescribe in these lessons, they must still be observed. These three essentials must be observed continually, as long as you live.

So far, no special exercises for the singer have been required. What has been given is essential for all voices. The singer needed these exercises as much as the speaker and the defective voice. The following directions apply especially to singers. Special exercises for the speaker alone, and for the defective voice alone, will follow in later lessons.

Place the little finger under the tongue. Sing B flat on the third line. If you notice that the beat is made at the instant of the tone and the tone is strong and free, you are right. That is your best tone! Remember that you must attack the tone suddenly, strongly, and with ease. (If you do not know the notes, then sing any tune that is easy for you.)

Sing the B flat three times, with a pause between each tone. At the pause, the beat of the tongue will disappear, to become instantly noticeable at the next tone. As long as you hold a note, the beat will remain steady. Now proceed. Sing B natural, then C, and so on, by half steps; each tone three times, with a pause between, up to F on the fifth line. Do not, for the present, go above F, but proceed now by half steps in the chromatic scale, downward as far as your voice naturally extends.

The limit of your voice is the "beat." When you do not get a "beat" of the tongue, you have reached the limit of your voice for the present.

Some of you may not get a beat as high as F. In

that case stop at the note where the beat ceases to appear. Do not become discouraged or cross, merely continue the groove exercise from day to day. Your "beat" will become more distinct and in a little while you will go as high as F. Many of you, who are tenors or sopranos, will not get a beat much below E flat, on the first line. This also need not worry you. High sopranos or tenors rarely go much below this note. Middle C is a difficult note for high voices and yet nearly all teachers and books of exercises start on the middle C.

Every voice, high or low, can reach B flat on the third line. Take that as your central note. Notice that already your voice is much fresher, stronger and more supple than it has been, and that you feel free. Your throat feels open. Your resonance is much stronger and exactly where you always wanted it, in front of the face. Observe that you did not try to do these things, but there they are!

The tone is not a result of resonance, but just the reverse. The resonance is the result of a good tone. Freedom and an open throat did not induce a good tone. Just the opposite is the case. The correct tone, the good tone, is the cause of freedom, ease and an open throat.

Gradually, after you are sure of your tones, sing two whole tones in perfect legato. Start with B flat always. Sing B flat-C, then B-C sharp, C-D, and so on. Proceed up to F by half steps, then go down the scale. Do not go either up or down any more than your voice at present allows with the **utmost** ease. Observe that the beat is felt on the first note and remains while you sing the two whole tones. Repeat the tones slowly two or three times, pause and go to the next half a tone higher.

Later, sing three notes in succession, then four and

finally five, proceeding by half steps. **The first step may be any note of the chromatic scale; the note or notes following this are the notes of the Diatonic major scale of the key with which you started.**

When you are sure of every tone, then sing the first five tones of the major scale. Sing slowly up and down, then with the same breath, very fast up and down, and then pause. Proceed this way downward, reversing the order of the scale as far as your beat will let you.

You may now use your knowledge and experience in simple songs. They should, however, not exceed your present compass. First sing every note to "ha." When two or more notes are joined to a syllable, you must connect them, as in the runs just given. You notice the beat then only on the first note, but the pressure remains as long as you sing. On separate tones, of course, the beat is felt for every new note.

Having made sure of a good tone for every note, read the words, still with the little finger under the tongue. If you are careful on each syllable, you will feel the beat and your diction will be strong and distinct. Now, apply the text to the notes and see that your tones are very clear, strong and full; at the same time your text should be plain and easily understood. You can study many songs this way.

Do not neglect any parts of these lessons. They are all important, not only to speakers and defective voices, but also to singers.

Special instruction on songs will follow.

EXAMINATION QUESTIONS ON LESSON XV

(1) Human progress has been proportionate to its power of resistance. Does that apply to the voice?

(2) Can you now make the groove all the way back in the tongue with ease?

(3) When you make the groove, is the throat open and loose, or in other words free?

(4) Do you notice the pressure or "beat" of the tongue against little finger?

(5) Can you relax the tongue after the beat is made?

(6) What are the three things to be remembered in vocal attack?

(7) Do you notice the beat when you sing a medium tone?

(8) Do you notice resonance in the tones that are made with the beat?

(9) Do you notice freedom on such tones?

(10) Can you read aloud and notice the beat?

LESSON XVI

HISTORY OF VOICE AND VOICE METHODS

(Continued)

THE RENAISSANCE

The Christian religion has proven itself stronger than all other religions. The gods of Greece and Rome are fallen, never to rise again. But with the downfall of Greece and Rome, their high culture, their philosophy, their noble arts, were also forgotten. While man cannot live by bread alone, it is also true that he cannot live by the spirit alone. The material things of the world, while we are in it, must be attended to, else even the spirit will disappear, for all impressions, whether for good or evil, must of necessity either elevate or depress the spirit.

That which formerly had graced humanity, its sense of beauty for form and color, its capacity for outward expression, the individual beauty of life, had been broken to pieces, to lie scattered and forgotten for a thousand years. Gone were the architectural beauties, the superb sculpture, the drama, the philosophers, the orators and the statesmen of the old civilization. With them, of course, went the debauchery, the rascality and dissoluteness, to destroy which the better parts had also to go. The moral issue had become supreme. All else had to make way for it. The moral worth of the barbarian was superior to the intellectual worth of the highest culture of the time.

But moral worth, sincerity and spirituality need not exclude the highest state of intellectual culture; on the contrary, both must go hand in hand to make man worthy of his Creator, to prepare him for his high estate in eternity.

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The man who sneers at intellect and art is not a true Christian and certainly only an inferior man, be his moral conduct ever so good. We know what baleful influence bigoted but stupid morality exerted in the Middle Ages, as instanced by the tortures of the inquisition: how the same spirit tolerated the burning

Fig. 104
St. Cecilia—Raphael.

of witches, even in America, and how profoundly it influences many modern agitators, who wish to make the world moral by statute law.

If you have read Mark Twain's "A Knight at King Arthur's Court" you can readily see what effect ignorance had on the people who lived during the first thousand years after the fall of the culture that was Greece.

It was St. Francis of Assisi (1182-1226) who again erected a bridge to span the abyss between Christ and man. He introduced a new Christ, a brother, a sympathizer with man. The severity of a cold faith was changed to a religion of love and grace. A new inspiration took root in humanity, and first of all in Italy, where Dante wrote his Divine comedy. The sense of beauty and form was reborn; the arts of the past were again studied. Great men like Michael Angelo, Raphael, Leonardo da Vinci, Correggio, Titian, Petrarch, Boccacio, Galilei, and others, lived and worked for new ideals.

The ancient Greek dramas were revived and gradually were set to the music of the time, so that in the year 1600 the first grand opera, "Dafne," by Jacopo Peri, was performed at the court of the Medicis.

In ancient times drama was not spoken, but sung. The principal characters used a sort of chant with an accompaniment of the lyre, and the choruses were also sung. So, when the new literary enthusiasts considered the means at hand, they found there was plenty provision for the choruses, but none for the solos of the principal characters, for all music up to that time had been chorus or congregational singing. The entire musical system was polyphonic—that is, many voiced. The question arose, how should the soloists be provided for?

This problem was solved by Vincenzo Galilei, the father of the great astronomer, Galilei, or Galileo, as the name is sometimes written, who wrote a few songs and sang them himself to his own accompaniment on the viola. Everybody was charmed. Society took up the new art. Real musicians endorsed the new departure, and thus monophonic or single-voiced songs were established in public favor. Opera now became possible, because the songs would serve to express the emotions of the principal characters. The solo songs in the opera were called arias. They represented the highest state of feeling of the action. But the action, even of the principal characters, does not always retain this high state of feeling. Much of the dialogue, of course, would have to be spoken. To obviate recourse to spoken words, the recitative was invented. This is so well adapted to its purpose that it has been retained to the present day. It is a sort of compromise between song and speech; a declamation, partaking of the nature of both.

The music drama was now complete. Grand Opera made its bow to the world. The new art form was taken up with rapture in all countries; both prince and pauper delighted in it. In this wise began the career of the great singers.

At last and for the first time, the human voice came into its own in singing. Its wonderful possibilities began to arouse attention: not only singers, but orators, actors, preachers, statesmen, all those who live by their efforts of mind and voice were attracted to the study and development of their own voices. Henceforward a new art, a new branch of human activity, began to be cultivated.

For over a century opera remained a purely Italian product. The text of operas remained Italian up to

the 19th century, even in England and Germany. France alone adopted a national style of text.

The first great name among composers of opera is Alessandro Scarlatti (1659-1725) and he is also the first voice teacher of whom we have any record. Of course, there had been singing teachers before that, but they taught chorus singing and not solo singing. From his time until the present, Italian opera has laid prime stress on its melodies, good singable, pleasing melodies and graceful forms.

Gradually, the dramatic action was lost sight of entirely. The solo singer became the main element of the opera. Often the action of the drama was stopped, even in a critical situation, in order to give a singer an opportunity for display in a long and elaborate aria, pleasing in melody, but sensational in character, and full of technical difficulties. Male sopranos (eunuchs) competed with female singers in virtuoso performances. Great schools for training of solo singers arose in Bologna, Rome, Milan, Venice, Naples and Florence.

Fig. 105
William Tell—Rossini.

Everything was sacrificed to sensuous charm, brilliant effects and to the vanity of the singer. From this time dates the glory of the great singers, both male and female. The principal composers who made possible the great fame and the great wealth of the opera singers were, first of all, Rossini, whose operas, "William Tell," "The Barber of Seville" and others, are among the most brilliant and striking of their kind. Then came Bellini, with "LaSonnambula" and "Norma," and Donizetti with "Don Pasquale," "Lucrezia Borgia," "Lucia de Lammermoor," "Fille de Regiment," etc.

The climax of Italian operatic achievement was reached by Verdi, who made a great advance both in orchestra writing and in devising a style adapted to dramatic truth, especially in his later years. His operas, "Il Trovatore," "Ernani," "Rigoletto" and "Aida" are household melodies. Boito's "Mefistofele" also is still in the repertory.

In France meanwhile a new form of opera was created, that of opera comique or operetta. It was a reaction against the stiff and stilted manner of the established style of French literature and art. Rousseau, the great human naturalist, began to write his so-called "Philosophy of Enlightenment." The mental tendencies of the French cultivated classes were just as artificial in all departments of art and literature as their landscape gardening, which required that all trees and shrubbery should be clipped into fantastic and artificial forms, no tree being allowed to develop itself naturally or in its own regular way. Then came the other extreme, when French royalty and nobility were beheaded during the Revolution, when the masses reigned supreme, and were, in turn, as foolish and mischievous as had been the nobles before them.

Among the French composers of grand opera must be mentioned Gluck, whose "Orpheus and Eurydice" proclaims him a genius of highest order. Then came Meyerbeer, who, like Gluck, was German, but living in France, who wrote "The Huguenots," "Robert the Devil," "The Prophet," and "l'Africaine." Since his time the greatest names in French opera have been Thomas, with the opera "Mignon," Gounod, whose "Faust" is just as popular today as ever, and Massenet. Bizet's opera, "Carmen," is still a great favorite.

Fig. 106

Faust—Gounod.

Opera in the German language was for a long time not synonymous with German opera. The nearest approach to it was made in Hamburg, which city was

for long the musical center of Germany. Haendel wrote his first opera there, though later he moved to London. Mozart in Vienna wrote his operas in Italian. The form of much of German music was in the Italian style. "Don Giovanni" and "The Magic Flute" are purely Italian. The great Beethoven aimed at a purely German opera in his "Fidelio," but this is rather cosmopolitan than German. The son of an actor and theater manager, K. M. von Weber, was more successful in establishing a purely German opera, especially in the "Freischutz," which he wrote for the Dresden opera. It aroused popular enthusiasm and stimulated the German composers toward national music. This national spirit culminated in the greatest of all opera composers, Richard Wagner, who also was the son of an actor. Wagner was early attracted to the study of Shakespearean dramas. He was a man apart from others; he went his own way, thought his own thoughts, and knocked popular ideals from their pedestals right and left. He simply saw clearer and further ahead than others. His operas and music used to be called the music of the future, but they are now, and have been for a long time, the music of the present, and Wagner operas are played more often than all other operas combined.

In England there has been no original school of opera. English composers have followed more or less on the lines of the Italian, French and German writers. The best known opera of an English composer is "The Bohemian Girl" by Balfe, who is really an Irishman. "The Mikado" and "Pinafore," by Sir Arthur Sullivan and W. S. Gilbert, are in reality operettas, and as such have enjoyed and deserved great popularity.

In America, thus far, there have been only few operatic composers. The most successful has been Reginald de Koven.

Fig. 107
Don Giovanni—Mozart.

In the last fifteen or twenty years a large number of opera composers of superior talent have made their way to the front and still hold the attention of the public. Such men are Leoncavallo and Puccini in Italy, Massenet and Saint-Saens in France, Richard Strauss and Humperdink in Germany, while Lehar, the composer of the "Merry Widow," and others in Austria, maintain the interest in opera and especially the demand for many singers. Illustrations of several of the newer kinds of opera are given in this and other lessons, as well as of the older schools of opera.

THE DEVELOPMENT OF THE SONG

As we have seen, songs were among the earliest manifestations of what could be called music. The impulse to express feeling vocally is universal, so is the desire to express rhythm. The monotonous chant of the savages naturally falls into measured cadences, so their war songs are accompanied by the rhythmic beat-

ing of a drum or gong. Out of this feeling for melody and rhythm grew lyric poetry and the music to which it was sung. Early songs were commonly a ballad stanza, of four lines exactly fitting our eight-measure musical period. An excellent example of such an early ballad form is the ancient French tune "Malbrook," known in America as "We Won't Go Home Till Morning." These simple forms were more or less extended in the hands of the great masters.

But even the more elaborate ballads of the great composers were apt to make a single air or melody do duty for a good many stanzas, whereas literary and poetic development brought with them a desire to express poetry more fully than by a constant repetition of the same melody.

The man who grasped this principle more clearly than any other composer was Franz Schubert (1797-1828). His work is so important, both in quantity and quality, that he must be regarded as the creator of all art song. Up to his time the poet was poorly thought of; the actor was despised. In England, Shakespeare was considered to rank not much above the tramp; even later, when Haendel produced some of his operas, the English papers in the Provinces announced that Haendel, with his "lousy" troup of fiddlers, was in town. Civilization, such as it was, was confined to the nobles and the court. Even the teachers at the universities were indifferent. Their interest was taken up in Latin theses of great length and little sense. We owe our civilization entirely to the independent minds of the few poets, musicians and thinkers who were so far above the crowd of the dominant leaders that neither could understand the other.

With Beethoven's ninth symphony, the classic period of music reached its apex.

The new school of art which advocates more than just perfection of form and thought, which is subjective, and interested in the expression of feeling and imagination only, is called the romantic school. Classic repose and nobility of form had come to be regarded as an academic repression of individual life. Politically, the nations were again under the sceptre of reactionary government, who threatened now the intellectual as well as the physical life of the individual. Poetry and literature, disgusted with political life, withdrew into themselves. They began to dream. Artists had grown in intellect. They had become sensitive, perhaps not seeing as clearly as the fathers of the classic period, but feeling more deeply. They demanded a more colorful, richer life, more adventurous, and more interesting than life as they found it. In this period fell the birth of Franz Schubert, the son of a public school teacher near Vienna.

At the age of eleven years he joined the boys' choir at the court chapel in Vienna. His passion for composing could only be satisfied when a friend brought him the necessary writing paper, for Schubert's father was too poor to give him the needed supplies. When his voice broke and made singing impossible, he accepted a position as primary teacher, receiving therefor the salary of about thirty dollars for an entire year's teaching.

In spite of this poverty and uncongenial work, his compositions increased in number, quality and beauty. At the age of eighteen, he had laid the cornerstone of his future popularity with "The Erl King." In 1816, a friend offered him a home and released him from the irksome teaching. His wonderful talent was not appreciated at that time. No publisher had the foresight or courage to publish his works. Only after an opera singer and admirer of Schubert's songs had sung

them in concerts, did people begin to take notice of him. Finally, when the world's greatest pianist and most generous of men, Franz Liszt, transcribed many of the best songs of Schubert for the piano, and played them everywhere, the world opened its eyes to the new and great light that had risen.

Heretofore, a poem had been provided with a melody, but in the hands of Schubert a poem became a song. Words and music belong together. What the words only say, the music makes you feel. The accompaniment, too, becomes an essential part of the poem. In this respect Schubert paved the way for Berlioz and Wagner, and the entire modern school of opera. He caught the sense and sentiment of the poem.

Just as Schubert gave us the modern song, so Carl Loewe, who was contemporary with him, gave us the modern ballad.

The ballad was originally a dance song. When the Italian peasants danced, they sang, because in the early centuries, instrumental music was almost unknown. This dance song was improved by the minstrels. It soon became known in England, and there was taken up by the bards in their songs with historical, political and heroic subjects. From that time on, this ballad form of singing became very popular. It told stories in verse and music. It describes time, scenery, dialogue and action. In fact it is a little opera or story told by one singer.

Loewe took up this form and enlarged it. He brought the ballad to the highest development. For instance, in the ballad, "Archibald Douglas," we hear the canter of the horse, the waterfall, we feel the spirit of the heather and the woods, we feel even the silence of the trees. Also, in "Tom, the Rhymer," we are made

to see the fairy of the woods, hear the tinkle of the bells and feel the whole mysterious witchery of the Scottish Highlands. Loewe's heart lies buried within the organ of the Church of St. Jacob, in Stettin, where he was organist for many years.

Not as poor in purse as Schubert, but nearly equal in genius, was Robert Schumann, who carried on the form established by Schubert, and enriched it, especially in the accompaniment, which has now become just as important as the song itself.

There have been many writers of songs since Schumann and Schubert died. The good ones are more or less followers of these two pioneers. Nothing especially remarkable has been accomplished since. The world now has entered the period of science, of analytical knowledge, of exact methods, which will, in time, bring the great works of the past to the masses. The great mass of people have not as yet been educated to an appreciation of the works of the great masters. In the past we had comparatively few artists who could interpret the great works.

The attempts that have in the past been made to develop the human voice will be related in the next lesson. It seemed to me necessary that you should know something of the history of singing and music. The crude savage, triumphing after a successful kill, the barbarian singing his war song, old men relating in measured cadences the deeds of their forefathers, priests chanting to some god of wood or stone, such were the forerunners of our poets, orators and singers. The sound of the voice must have played a prominent part and, in fact, we know from history and present-day experience that the voice as such, aside from the thought itself, has played a very important part in human life.

EXERCISES FOR LESSON XVI
THE PALATE ATTACK

We have a saying in America "A half loaf is better than none." This applies also to the palate attack. The highest type of voice can be attained only by the tongue attack, and all lessons that you have so far received and all those which are yet to come, tend to develop primarily the tongue attack. But the tongue attack depends solely upon the strength of the hyo-glossi muscle. Now some of my students have by nature very weak hyo-glossi muscles and need much practice and time to develop this strength.

In the meantime they must still be able to use their voices to the best advantage. Everybody has some voice and even a little natural voice can be utilized to great advantage when you know how. This lesson is written especially for those with very weak voices, in order to help them while they are practicing for better control and greater strength of the hyo-glossi muscle. **All** exercises of the tongue should be continued every day. They are indispensable. Practice most with the little finger under the tongue. See that the groove is made far back in the tongue. Frequently test the larynx. See that it moves neither up nor down. Also that the palate remains quiet while you make the groove. Of course the palate will move a little when you speak or sing.

While this lesson is written especially for very weak voices, those with strong voices must also study it as carefully as though they had weak voices. Where there is light, there also must be shade. To speak or to sing always at the same rate of strength, would become monotonous. Both speech and song would lose much of their effect. The highest quality of voice demands

shading. The most powerful tone, as well as the lightest whisper, must be under the control of the speaker and singer.

This lesson is also most valuable to those with defective voices, for it will teach them not only the same voice control as the normal speaker, but it will enlighten them materially as to their former habits of speech.

In the "glottis attack" you have been given the means of getting a strong voice quickly and easily. Now you are getting the means to produce a light, but very distinct voice, also, quickly and comparatively easily.

Singers will need just this attack, for so-called "head tones" and for special voice effects, when we come to the lesson dealing with these points. They should study this attack now and be all the better prepared for the future lessons.

Turn to Fig. 30, Lesson III, "The Complete Vocal Mechanism," and observe the muscle that grows out of the soft palate (9) and descends into the rear horn of the thyroid cartilage (2B). This is the main vocal muscle. When this muscle is cut, voice is no longer possible. The hyo-glossi muscle, of which you have heard so much, gives this muscle, the palato-pharyngei, consistency and strength, but only when the hyo-glossi is very strong; otherwise it must operate alone. It **can** operate alone, but only when the vocal cords remain thin. Therefore, when you speak or sing with this muscle alone, the voice cannot be as large and full as it is when the other muscles, especially the hyo-glossi muscle, are also active.

But while the quantity of voice will be less, the quality is not interfered with. A voice may not be very strong and yet the quality may be very good; nor does

a weak voice mean that you have to wait for the full strength of the hyo-glossi muscle to speak or sing in public. Not at all. This exercise will make your voice clear and distinct, so that it can be heard even in a fair-sized hall or church. Any voice that is clear and distinct, not breathy or husky, can be heard at quite a distance if handled properly.

1. Whisper, or make a sibilent sound, as of the wind, as softly as you can—"ha," "ha," "ha." Gradually observe that you feel the warm breath above the tongue against the palate, but **surely not in the nose!**

2. Think of a low sound, or first sing a low tone to impress your ear and then try to whisper "ha." This low pitch may be hard to get for some of you. Do not strain to get a low pitch; simply use the lowest pitch you can get **without** straining. See to it that it is not rough and not breathy.

3. Now try to whisper "ha" as high as you can, as high and thin as a mosquito sounds. When you succeed, you will observe a thin, slender thread or stream of breath and tone. It will seem to be right under the nose, **but never, under any condition, through the nose!**

You will feel a certain tightness in the palate as long as you whisper in a high pitch; this is right. You should not, however, feel any tightness in the throat. Tightness in the throat is wrong.

Palate tension is right. Throat tension is wrong.

Take only your ordinary breath. Do not try to hold the breath, merely think first of a medium pitch, then a low pitch, and then higher and higher, as high and as thin as a mosquito's sound. When you succeed, there will be no suggestion even of breathiness. The whisper will be very clear and you can hold it for a long while.

Experiment until you can get a clear, clean whisper. Think, also, that you want to tell a secret to someone in a crowd of people, but you don't want anybody else to hear it.

The husky, rough, breathy whisper often heard is more than useless. The catarrhal whisper is directly dangerous. It is a disease.

Many persons, in fact almost all who have weak voices, will find, upon examining the tonsil region, that the arches are more or less inflamed, often angry red. Bear in mind, as a **hopeful** sign, that it is not the inflammation of the palate and tonsils that causes your weak or husky voice, or your irritation and constant clearing of the throat. Just the reverse is true.

Your weak voice is the cause of inflammation! Make your voice strong and the inflammation will disappear.

4. Repeat the whisper, low, medium, high and very high. Alternately place a hand on the chest or the abdomen, to see that when your whisper is clear and distinct, not breathy, neither chest nor abdomen move much. To the contrary, there is only a very gradual sinking noticed in the chest as you continue to whisper. Do not try to hold your breath. Gradually forget both chest and abdomen as being materially implicated in the sound.

5. Prove the above by whispering some sentence like: "Old Mother Hubbard went to the cupboard to get her poor dog a bone." Whisper this at first in a careless, breathy, even husky manner. Place the hand on chest or abdomen and notice that both sink very fast. But if you suddenly whisper in the **right** way, as taught under paragraphs 1 to 5, neither the chest nor the abdomen move, or but very slightly.

These are not exercises that you practice much. You "catch on" and then you have it. Some may catch on very quickly, others slowly. Just keep on trying until you do catch on.

PROLONGED SPEAKING

1. Read the following lines (Lincoln's address at Utica) in your usual way of reading aloud. Do not try to read either well or badly, but just in your own natural way. Listen to yourself. Is your voice husky, scratchy and breathy, or is it clear, distinct, and free?

"Ladies and Gentlemen: I have no speech to make to you, and no time to speak in. I appear before you that I may see you, and that you may see me; and I am willing to admit that, so far as the ladies are concerned, I have the best of the bargain, though I wish it understood that I do not make the same acknowledgment concerning the men."

After reading this aloud in your natural way, read it again aloud in the **worst,** most careless way you can, and closely observe your faults.

2. Now whisper the lines, first low, then higher and lastly very high. Of course you have to read slowly. Notice that the voice seems to come from above the tongue, near the palate. You will feel a gentle tension in the soft palate, but nowhere else. Repeat until you are sure that there is now no breath escaping with the words, no huskiness, no scratching; on the contrary, that every word is clear and distinct. Test it by whispering the lines to a friend who has not read it. If you have succeeded, he will understand every word, even though you are only whispering.

3. Now read it aloud, but without the slightest exertion. Simply speak from the point where you felt

the breath against the palate, or where you felt the little tension above the tongue. That is the point of palate attack.

Your voice will be rather light, but very clear and free. You can often practice speaking for hours in this way and be heard distinctly in large places. These are the so-called "head tones," so very important for amateur singers and for the artist singer, for special effects.

4. When reading in this manner, notice the natural pitch of your voice. Every person has some pitch (low or high) which is most natural and easiest. The pitch in which you speak most easily is your own natural pitch, and it is well to remember that pitch, because at moments of excitement you are liable to forget it.

It may help the speaker to fix the pitch of his voice in mind, to buy a tuning fife at some music store. These fifes are graded, so that you can easily find out to what pitch your voice corresponds. Those who own a piano, of course, can find their pitch very easily by comparison with the key on the piano. The usual pitch for weaker voices is from E first line to G, or even A above that.

In the next lesson we will review all these attacks and combine them, so that you will know how to modulate the voice for dramatic effects and for variety. Singers will be taught some songs, beginning with the next lesson, which will gradually embody all that has been taught so far. Defective voices should be benefited very greatly by this lesson; it will help them over many present difficulties.

EXAMINATION QUESTIONS ON LESSON XVI

(1) Who is considered the first voice teacher?
(2) When was the time of the great singers?
(3) Who is considered the greatest song composer?
(4) What is the palate attack?
(5) Can you whisper without throatiness?
(6) Is your throat loose when you whisper?
(7) Can you read distinctly with the whisper?
(8) What is your best whisper, high, medium, or low?
(9) What is the pitch of your natural speaking voice?
(10) How many attacks have been taught?

LESSON XVII

HISTORY OF VOICE AND VOICE METHODS

(*Continued*)

ORATORY AND SINGING

Henry Ward Beecher said: "Not until human nature is other than it is, will the function of the living voice, the greatest force on earth among men, cease."

DEMOSTHENES.

Fig. 108

The ancients regarded eloquence as of celestial origin, ascribing it to Hermes, the messenger of Olympus. They claimed that oratory and freedom are twins. Pericles, Demosthenes and Aristotle were the most con-

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spicuous and influential men in Athens. Transplanted to Rome, we find that oratory became of great importance, secondary only to the arts of war. It was the speech of Brutus, holding aloft the bloody knife with which Lucretia had been slain, that fired the people to expel the Tarquin. Cicero was the type of Roman orators.

With the advent of the Apostle St. Paul, who spoke with a "Tongue of Fire," a new civilization was introduced, that of the "Man of Nazareth." When the

Fig. 109]
"The Man of Nazareth"—Van Dyck.

Emperor Constantine espoused Christianity, one of his first acts was to proclaim freedom of speech. Discussion assumed a breadth and depth which literally shook the pillars of the state and caused the foundations of the church to tremble. The great orators of the church arose, such as Ambrose of Milan, St. Augustine and Leo the Great, and set things to right again.

In the Middle Ages we find the Venerable Bede in England and Thomas Aquinas in Germany, as bright lights in the surrounding darkness. Then came Peter, the Hermit, preaching the crusades, whose voice thrilled the heart of Europe to march against the infidels in Palestine. Then, later on, arose the voice of Savonarola, to rebuke the vices of a dissolute age. Luther, Knox, and Calvin were the voices which inspired the Reformation. In the English parliament we remember such men as Pitt and Gladstone, whose oratorical arts influenced the nation. The voice of Bismarck was needed to bring about a united Germany.

Vigorous oratory has flourished in the United States from the beginning. As a people, we have never been without capable and fearless men to voice noble sentiments of patriotism and liberty. The Colonial and Revolutionary periods of our history were crowded with events as thrilling as ever stirred the multitudes of Athens and Sparta. A host of great orators arose—John Quincy Adams, Samuel Adams, Patrick Henry, etc., whose fires of eloquence created a new tradition and inspiration, unrestrained by any influence from abroad. Breathing the air of freedom, there was every incentive to eloquence, and it is no surprise to the student of history to find the American colonies resounding with impassioned oratory. Patrick Henry, "We must fight! I repeat it, sir, we must fight!" was the

electrical thrill of the Revolution. So were Alexander Hamilton and Benjamin Franklin among those whose eloquence and statesmanship founded the Constitution.

Clay, Calhoun and Webster have become household words as oratorical giants. In the pulpit, too, we have had many splendid orators. Henry Ward Beecher's silvery voice, rare compass and power stood the test of popularity for half a century. Abraham Lincoln, the greatest of all Americans, was also perhaps the foremost of orators of his time. The single speech of William J. Bryan, in the Chicago Convention of 1896, electrified millions; the results following the silvery voice of the candidate have had no parallel in the history of America. Scores of public men in Washington and elsewhere, in the pulpit and in the halls of justice, keep alive the fires of patriotism, justice and liberty.

Note Oratory is speaking in public, but not all public speaking is oratory. The true orator, whether as a statesman, in the pulpit, in court, as a salesman, teacher or anything else, is he whose words have a visible, practical effect upon those who hear him. He must bring his words home, "put it over;" the result must tell of his worth.

The great orators were not great simply because their ideas were greater than others, but mainly because they had the power to present their subject with a voice of feeling so deep and sincere that it affected the hearts of those who heard them.

I am trying very hard to give you a short summary of all that has been done in the matter of voice training, from the earliest time of which we have any record to the present. In this lesson I shall give you what the

scientists (old and new) have said about the voice. In the next lesson I will tell you of the methods of practical voice teachers as far back as we have any records.

JOHN CALVIN.

Fig. 110

As already mentioned, the ancients made a good deal of the study of voice. There can be no doubt about that, because with them public speaking was of much greater importance than with us. Now we have newspapers, books and magazines; they had neither, and the public speaker supplied the demand for news and education.

They had no exact physiologically scientific method. Whatever they did to develop the voice was more in the nature of experiment and guesswork, and we learn more from their mistakes than from any definite accomplishment.

Hippocrates (430 B. C.) knew only that for a good voice it was necessary to breathe; the human voice to him was like a whistle.

Aristotle (350 B. C.) believed that the compass of a voice depended on the age of the individual; that the

size of larynx was the deciding factor. He thought that a person could enlarge or diminish the size of the vocal apparatus.

Galen (160 A. D.) made the first anatomical study of voice. His analyses were based on the larynx of the pig. The term "glottis" originated with him. Glottis was the tongue of an instrument much used in his time and he thought it had a great resemblance to the voice instrument. He says that in the hollow or tube of the larynx there is a protuberance unlike any formed in animals, and that the air pushes against this. The protuberance is made narrow by two muscles which run from the thyroid cartilage to the arytaenoid cartilage. He also claims that nose breath is needed more for singing than for speaking.

Perault (1680) was the first who discovered that the muscles which make up the vocal cords are the real source of voice.

Dodart (1700), in his memories dedicated to the Academy of Science in Paris, says: "The glottis is the source of voice. The voice results from strongly agitated air. The difference between the chest and falsetto voice is that, for the chest tone, the space of mouth and nose vibrate normally, while in falsetto, the space of the nose vibrates more and the space of the mouth less!

Anton Ferrin, Paris (1741), is considered the author of experimental voice physiology. He experimented with the larynx of dogs. "I brought the lips of the glottis together and blew strongly through the air tube. At once the organ seemed to come to life, and I heard not one, but many tones, which to me were more sympathetic than any concert."

He found that the voice is stronger when the vocal chords are near together, and that the voice is weaker

when the vocal chords are farther apart. If you stop the vibrations of the chords, no voice is possible. When the chords are shortened, the pitch of the voice gets higher, just as when the strings of an instrument are

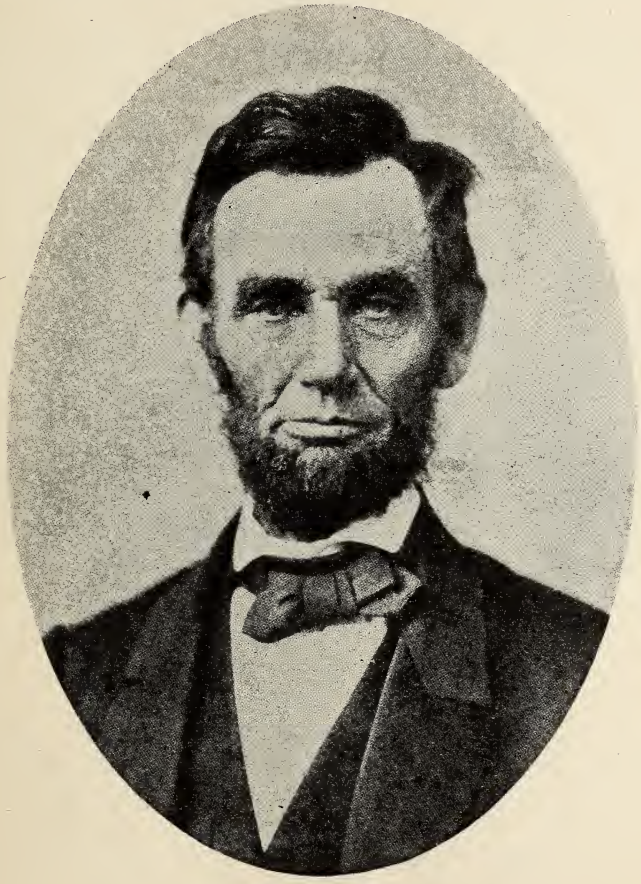

Fig. 111
A. Lincoln.

shortened. During life the vocal chords are never shortened. **The difference in tension** is the cause of the difference of pitch. He even observed correctly the mechanical means of tensing or stretching the vocal chords.

He says: "If you turn the front part of the thyroid cartilage downward, making the space between it and the cricoid cartilage below smaller, the pitch rises because the vocal chords are being tensed or stretched."

Wolfgang von Kempelen (1791) was the inventor of a speaking mechanism. He stretched two membranes over an elastic ring. If you bent the ring, the membranes were stretched, and by blowing breath against them you obtained tones. As you bent the ring more and more, the tones rose in pitch. Contrariwise, if the ring was pressed inward, the membranes relaxed and no tone was possible.

Cuvin (1803) :"The spaces of the pharynx and mouth determine the original tone by their length and shape, and the glottis through tension causes the overtones."

Dutrochet (1806) declared that the muscles "thyro-arytaenoides" are the origin of voice; the difference of pitch was caused by stretching these muscles. The human voice was like a cornet, where the original cause of tone was the tension of the lips of the player. The vocal chords were only the covering of this muscle, to protect it.

Liskovius (1814) said the origin of voice was the air in the glottis. By increasing the breath pressure, the pitch could be raised five tones. The vocal chords vibrate.

Savart (1825) compares voice to a whistle. The space of mouth and pharynx act like organ pipes.

Magendie (1816) says the more the arytaenoid muscles are stretched the more are they capable of producing tone, and the faster they vibrate, the higher is the pitch.

Malgaigne (1831) compares the voice to the tongues of organ pipes. The thyro-arytaenoid muscles are like the lips of the cornet player.

Colombat d'Isire (1834) says: "The falsetto voice is caused by a contraction of the root of the tongue and palate."

ARISTOTLE.

Fig. 112

Bennati (1833) finds that the larynx is only of secondary importance; the modulation (quality) of voice is caused by the muscles of the pharynx.

Joh. Mueller (1858) is considered the most prominent among those who have made an exhaustive research into the physiological mechanism of the voice. After studying the human larynx, he invented an artificial larynx. With this artificial larynx he experimented in phonetical mechanism. To one end of a tube he fastened two rubber bands. The space between the bands is the glottis and the rims are the vocal chords

The ring cartilage and Adam's apple are made of metal and attached to the tube by means of sinews on the metal parts. The rubber bands can be stretched in much the same manner as the vocal chords are. By blowing breath through the other end of the tube and adjusting the screws, the bands are stretched to different degrees of tensity. Some of the results of his experiments are valuable, for instance:

The tones change with increasing tension.

Vocal chords which give "C" under a tension of 4 ounces, do not give the octave "C" when the tension is 16 ounces, as is the case with strings, but only "A," and when the tension is 64 ounces, the tone is not "C," the double octave as with strings, but only "G" sharp.

When the vocal chords are removed from the larynx and artificially stretched, the tone is weak and poor. Such vocal chords gave, by a stretching process of 4 ounces, "D," by one of 16 ounces, only "A" sharp.

By increasing the longitudinal tension the compass of the tones can be increased two octaves. If you go beyond that (with the dead vocal chords) the tones become shrill and disagreeable.

The principal difference between chest tones and falsetto tones is that in chest tones the entire vocal chords vibrate; in falsetto only the outermost rim (facial lining). In chest tones all of the vocal chords vibrate; in falsetto tones (or female head voice) only a small part of the chords vibrates.

The chest tones can be raised five notes in pitch by a continued strong breath pressure, but the voice becomes hard and shrill.

The vocal chords are greatly influenced by the thyro-arytaenoid muscle. As its fibres grow into the vocal chords, it must enlarge the sounding material. The

vocal chords are not only stretched lengthwise, but also thickened through the influence of this muscle.

The epiglottis, the false vocal chords, the morganatic pockets, the palate arches, in short, everything above the vocal chords, are not necessary for either chest or falsetto tones.

If the vocal chords are stretched while **inhaling,** no musical tone is possible.

The length of the vocal tube has nothing to do with the tone.

When the epiglottis is lowered upon the larynx, the tone becomes dull, muffled, otherwise the epiglottis seems not to exert any influence on the tone.

The palate arches become narrow in chest tone as well as in falsetto. (This is very important and absolutely true. E. F.)

The sole purpose of the ventricle is to permit a free vibration of the vocal chords.

THE COMPENSATION OF PHYSICAL EFFORT IN THE VOICE

By compensation of physical effort we understand the change of condition in the muscles with respect to each other without changing the power or quality of a tone. If a string of a certain length and tension gives a certain pitch, then a similar string, shorter than the first one, can also give the same pitch only by increasing the tension.

When a tone in the human larynx is desired to retain its pitch in the scale and yet a graduated volume from soft to loud is demanded, there must be compensations within the larynx to retain the same pitch for the loud as well as the soft tones.

Increased breath pressure will raise the pitch. If it is desired to increase the **volume** of a tone, **but not its**

pitch, then the tension in the vocal chords must be diminished, as long as the breath pressure is increased.

In this Mueller is entirely mistaken. The compensation takes place in that more and more of the many muscles which in reality compose the vocal chords are drawn into the breath current, as the volume, but not the pitch of the voice is increased. We have thus a larger quantity of vocal material. **The large quantity vibrates slower than the lesser quantity** unless the tension is correspondingly increased. Mueller himself points to this in the next sentences.

The pitch can be influenced, when the sides of the vocal chords are made to approach each other.

The tension is alone sufficient to retain the higher chest notes. The more the vocal chords are tensed, the easier becomes the break into falsetto (female head voice).

Every vocalist can sing the same tones either with free or forced production. Practice will give him the means to use only the **agreeable** voice.

Harless (1853) proved by means of muscles taken from a frog, which were artificially stimulated to contraction, that the muscles became thicker and the pitch lower, in spite of considerable stretching.

He came to the conclusion that the muscle thyro-arytaenoideus lowered the pitch, because it made the vocal chords thicker. He therefore supports my contention, but forgets that, as the vocal chords become thicker, the tone becomes louder.

Ewald (1902) and Nagel (1908) made similar experiments and arrived at the conclusion that when the medial parts of the vocal chords are made to contract more than the lateral parts, a greater variety of tones can be observed.

Dr. Ernst Barth (1911) in "Physiology, Pathology and Hygiene of the Human Voice," comes to the conclusion that the muscles which constitute the vocal chords are the most complicated and wonderful mechanism in man. While the same degree of tension will give the same number of vibrations—provided the breath pressure remains the same—yet many changes in the consistency and form of the vocal chords will give many varieties of tone and effects.

Cagniard-Latour (1837) holds that the chest voice is only possible when the lower parts of the vocal chords vibrate along with the upper parts. When the upper parts alone vibrate, the voice is thin or falsetto.

Malgaigne (1831) compares the false vocal chords (above the true vocal chords) to the opening in a cornet. They merely give free space for the vibrations of the true vocal chords. Just as the cornet player's lips vibrate in the open space of the mouthpiece, so do the vocal chords vibrate in the free space of the false vocal chords.

It has often been assumed that the air tube and air pockets are resonating chambers. This is not true.

The walls which surround the air spaces are too soft to be considered resonators, but when the entire larynx is joined together as in singing, and especially because the larynx is then held firmly fixed against the spine, and because all muscles then become as taut as the strings of a violin; thus the air spaces are surrounded by a solid wall which is now capable of being set into vibration, together with other parts connected with the vocal organ.

THE PHYSIOLOGICALLY CORRECT ATTACK

By vocal attack is meant the movements or adjustments which the vocal organ makes when phonation takes place.

When at rest, the vocal chords are separated, so that breath passes freely and soundlessly between them. The space between the vocal chords is called the glottis.

Fig. 113
Mr. Leo Dietrichstein.

If the glottis is only gradually closed, the voice is breathy, because breath escapes with voice.

A clear attack takes place only when the glottis is instantaneously closed so that there is left only a small slit between the chords.

A forced attack takes place when the vocal chords are tightly closed before phonation; the effect is a hard, explosive and harsh voice.

You will readily perceive that many, in fact, most of the scientists had some very clear and practical ideas about the voice. The mistakes made by them and by the voice teachers up to the present time arose from not drawing the inferences properly arising out of their studies. They made certain statements which, if they had been followed up, would have long ago solved the question of voice training in a practical, scientific manner. But the scientist was not a voice teacher and the voice teacher knew nothing of science. Each claimed to be interested in the same subject, but they never came together. Two lines running parallel to each other may meet in infinity, but we want them to meet now! In my method they do meet!

EXERCISES TO LESSON XVII
REVIEW OF THE THREE FORMS OF ATTACK

I wish that all of my students could have heard the actor, Leo Dietrichstein, in "The Great Lover." Not so much on account of his really superb acting, but to enjoy his glorious speaking voice. For nearly two hours, he held his audience spellbound, day after day, here in Chicago. His voice throughout the entire evening was a marvel of vocal art; every syllable and sound was as distinct as the diapason pipes of a most perfect organ.

Every shade of human emotion was given with exquisite lusciousness and freedom from all restraint.

Some years ago I heard an opera company playing "William Tell." The acting and singing of that company was beneath contempt with one exception. The principal tenor of that company had a wonderful voice, equal to the greatest tenor ever heard. All of the other singers were poor, and entirely incompetent, but he saved the day. He was the only excuse and he alone filled the house every night. Now, that really great vocalist was a very poor actor. In addition he had crooked legs, only one eye, and he was otherwise deformed! But nobody cared for that; his voice was perfect!

In both of these cases, the "tongue attack" was at its utmost perfection, so perfect that, unknown to them, unconsciously, they always and under every stress of excitement employed only the tongue attack. As the action progressed their voices became even better, and I am sure they could have repeated the entire performance with ease.

This is what the tongue attack can do for you!

Many of you, no doubt, heard Mr. Bryan. Mr. Bryan would have been a great lyric tenor had he chosen the musical field. At his best, his voice is silvery, as clear as crystal. But as he continues, his voice changes to a less clear and higher pitch. His voice is still good, but no longer silvery. In the first periods he employs the tongue attack, then apparently either through excitement or some other cause, he loses control of the tongue attack and employs the palate attack. Mr. Bryan's tongue attack is not now as perfect as the tongue attack of the actor and tenor just mentioned, and because of that he slips up and hence is prompted to use an attack less favorable.

I often go to hear a clergyman near my home. He is to me a very sympathetic preacher, earnest and sincere. When he starts the sermon, his voice is almost as good as Mr. Dietrichstein's, but when he lets his emotion run away with his head, the voice becomes lower and somewhat hard, still clear, but no longer musical. He also loses the all-important tongue attack, but unlike Mr. Bryan, he uses the glottis attack.

All of these gentlemen are Americans. At their best their voices equal the best Italian voices; at their worst they are no worse than those of any other nationality. So neither nationality nor climate has anything to do with it.

Whoever has the tongue attack, also and invariably has a very fine voice. To make sure that you understand and can employ the different vocal attacks, a general review is now given you.

THE TONGUE ATTACK

Review your exercises on the tongue; that is, make the groove way back in the tongue.

Test the larynx by placing the finger against the under side of the cricoid bone, the lowest bone of the larynx. Now make the groove without moving the cricoid bone in the least, either up or down. **You must master this silent exercise!**

Test the palate and while you make the groove in the tongue, be sure that the palate and the uvula (the part which hangs down from the palate) do not move in the least. Also observe the tip of the tongue while you make the groove. This tip must remain loose and it should not move.

When you are certain of these conditions, you are ready for the tongue attack and even if your attack

should be weak, yet you will have a good voice within a limited compass.

Now place the little finger under one side of the tongue and make the groove, observing carefully all the above rules. See to it that the larynx does not move; that the palate does not move and that the tongue tip remains loose while and as often as you make the groove.

Now count "one." Observe whether you feel a slight pressure or tap upon the finger under the tongue, when you count. This "beat," as I call it, should instantly cease when you pause, to become again perceptible as you count "two." Count up to thirty, pausing a little before each count to observe whether you get the beat.

Change your voice, sometimes speak a little higher than usual, sometimes lower. At whatever point you get a distinct beat, that is your best, your really **natural** pitch of voice for public speaking or singing.

Read the following, from one of Lincoln's speeches; observe that on every separate syllable, you should feel the beat. Read at first very slowly and loud, as if you were addressing an audience.

"When the conduct of men is designed to be influenced, persuasion, kind, unassuming persuasion, should ever be adopted. It is an old and true maxim "that a drop of honey catches more flies than a gallon of gall." So with men. If you would win a man to your cause, first convince him that you are his sincere friend. Therein is a drop of honey that catches his heart, which, say what he will, is the great highroad to reason, and which, when once gained, you will find but little trouble in convincing his judgment of the justice of your cause, if indeed that cause really be a just one. On the contrary, assume to dictate to his judgment, or to command this action, or to mark him as one to be shunned and despised, and he will retreat within him-

self, close all the avenues to his head and heart; and though your cause be naked truth itself, transformed to the heaviest lance, harder than steel, and sharper than steel can be made, and though you throw it with more than herculean force and precision, you shall be no more able to pierce him than to penetrate the hard shell of a tortoise with a rye straw."

Do not now, in reading or speaking, look for the groove, but expect the beat.

Practice daily, speaking with little finger under the tongue for many months. This especially to those with defective voices. *Be sure to speak out loudly, frankly, as if you were calling across the street.*

PALATE ATTACK

As you were taught in the lessons on palate attack, whisper "ah," then "a," then "ee;" first low, then higher and at last very high.

Observe gradually, that the whisper is very distinct and clear only when there is no breath escaping, when there is no breathy admixture together with the whispered vowel sound.

When you have succeeded, you will notice that the whisper seems to be above the tongue, under the nose, but **never** in the nose!

When the sound is right, your throat feels free. There is no tension anywhere except a slight feeling in the palate, back of the upper teeth.

Now do not think of the tongue, but think that you feel the sound in the front part of the palate, a little back of the teeth, as you say: "ah," "a," "ee," "o," "oo;" also say: "do," "re," "mi," "fa," "sol," "la," "ti," "do," as no doubt you have learned at school.

Observe that the voice is not as strong as it was in the tongue attack, but that it is just as clear. A little thinner, but just as penetrating.

Observe also that the **pitch** of your voice in the palate attack is (usually) a little higher than it was in the tongue attack. Remember all this and then read loud, first very slow, later faster!

"You'd scarce expect one of my age
To speak in public on the stage;
And if I chance to fall below
Demosthenes or Cicero,
Don't view me with a critic's eye,
But pass my imperfections by."

—Everett

Select something else, a newspaper, the market reports or sports, anything in fact that interests you. Try both the tongue and the palate attack. The palate attack is well suited to most women's voices and to all men whose voice is naturally light and perhaps weak. It is a very good attack for smaller audiences, for churches, schools, for the salesroom and even for the smaller theatres.

This attack is especially well suited to soprano singers. To them it is the solution of the so-called head voice, which is so easy to acquire and yet, which many have failed to acquire in years of study, because their teachers did not know the principles of this attack. Nearly all singers can get the tongue attack for the middle voice, as far as "F" on the fifth line. Now they can employ the palate attack for the notes above the fifth line, and with a little practice, they will acquire almost any desired or needed height.

That the palate attack is a very practical and useful art, is shown by the fact that the three English girls, the "Misses Fuller," have been singing for years in our largest cities with considerable success. They use the palate attack, or half voice, entirely, and the effects they produce with the old English folk songs are quite

pleasing. They of course are not "stars," but they have attracted quite a following.

I will give further instructions for this attack in the songs which will follow in other lessons.

THE GLOTTIS ATTACK

This attack is best suited to male voices, especially to rather deep voices. Of itself it has a tendency to make the voice low. Some teachers compel their students to depress the larynx, to force it down, and in this wise they obtain a low voice. Forcing the larynx is always dangerous. To be sure there are quick results from forcing, but in the end it spells ruin to the voice. It is not necessary to force the larynx at any time to get low tones or to make the voice strong. The glottis attack will show you how to get a strong voice.

As taught in the lesson on glottis attack, cough very easily, slightly, as if clearing the throat. Imitate the buzzing of a bumble bee or a sawmill or the purring of a cat or the growling of a puppy dog. Observe that way down in the throat you feel two soft pads of flesh; these are the vocal chords. Repeat the buzzing and purring and notice a very loose, almost agreeable sensation of the vibration in your throat.

After you have been sure of this sensation, after you can localize it, again buzz or purr and without stopping let the purring or buzzing change to the sounds of "ah," "a," "ee," "o," "oo," but draw them together. Do not stop between the syllables, as in the other attack. Make any continuous sound you please and prolong it as much as possible.

Repeat the buzzing and keep up the vibration in the throat while with your lips you articulate "eeny, meeny, miny, moh," etc., or some other nonsense verse that you know.

Learn from this that the sound is made with the vocal chords, but that the articulating of sound into words or sentences is done mostly by the lips.

Now, again start the buzzing and slowly repeat these lines:

"As the moths around a taper,
As the bees around a rose,
As the gnats around a vapour,
So the spirits group and close
Round about a holy childhood,
As if drinking its repose.
—Browning

Merely determine to keep on buzzing, but articulate one line in a continuous sound, then stop and repeat the next line and so on. Do this at first very slowly, then a little faster, up to the natural speed and as you increase the speed of the words, also let your articulation become sharper, more distinct. You will, in this way, obtain strong, low speech or song, without effort and without straining.

This is very effective anywhere, especially for serious, earnest discourse, in church or in court, in concert or theatre. It is not well adapted for jesting or for light kinds of delivery. It should be reserved as a rule for slow, emphatic speech.

Try this out by reading aloud some serious article in a magazine. It is not advisable to use this form of attack continuously, because it is liable to become monotonous. Changes should be made to the tongue attack or to the palate attack.

Now again test these three forms of attack by using alternately the tongue, palate and glottis attack for the following lines:

"Speak the speech, I pray you, as I pronounced it to you, trippingly on the tongue; but if you mouth it,

as so many of your players do, I had as lief the town-crier spoke my lines. No, do not saw the air too much with your hands, thus; but use all gently; for in the torrent, tempest (and as I may say), the whirlwind of passion, you must acquire and beget a temperance that may give it smoothness." (Hamlet, Shakespeare.)

After you have read this with the three different attacks, then speak one sentence with the tongue, the next with the palate, and the third with the glottis attack.

Learn to use all three attacks and employ them as needed for public speaking and singing.

Those with speech defects should obtain very valuable results from this study, though a special lesson for stammerers will come shortly.

EXAMINATION QUESTIONS ON LESSON XVII

(1) Has the voice of orators had any great influence in the history of the world?

(2) Can you name some orators who have shaped the course of the American nation?

(3) When is a voice breathy?

(4) When is the attack clear?

(5) When is the attack forced?

(6) Are you now absolutely certain that you make the groove without motions of either the larynx or palate?

(7) Can you now whisper distinctly and without any breathy sound?

(8) Do you feel the whisper in the palate?

(9) Can you now differentiate between the tongue attack, the glottis attack and the palate attack?

(10) Which attack is easiest for you?

LESSON XVIII

HISTORY OF VOICE METHODS—(*Concluded*)

GENERAL SURVEY

The first record which has come down to us from the ancients in regard to voice training is the record of the greatest of all Grecian orators, Demosthenes. His father was a blacksmith and left him an orphan at the age of seven. Ambition prompted him to the

Fig. 114
Elysium. Orpheus and Eurydice—C. W. v. Gluck.

study of oratory. His voice was harsh and uncouth. He stammered and enunciated badly. His whole person was awkward. He hit upon the device of placing pebbles under his tongue and forcing himself to speak with this obstacle in his mouth.

Of the orator, Pericles, we know that he always

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addressed a prayer to the gods before speaking in public.

Up to the fifth century B. C., orators were also musicians. Voice training must have been closely associated with chanting.

The Roman emperor, Nero, was very vain of his voice. He took great care to avoid colds and is said to have placed a plate of lead against his stomach to help the voice. He also took special diet and baths.

No records of any special voice training have come down to us from the singing schools of ancient Rome or from those established by Charlemagne. We know, however, that they paid much attention to distinct articulation. They also saw to it that the body was held erect, the mouth in a natural shape and that the face was not distorted.

The first written method for the developing of voice and for the preserving of voice and health is contained in a book written by a singer and physician, Giovanni Camillo Maffei of Naples, Italy, in 1562.

It was a method written for those who wished to develop a voice "without a teacher"—senza maestro —as the title has it. The subjects taught are these:

I The Theory of Voice and Singing

a. The kind and purpose of the voice
b. Anatomy of the vocal apparatus.
c. How voice originates.
d. The character of the voice and its cause.

II Practical Exercises, Especially of Coloratura (florid singing).

a. The kind of coloratura singing.
b. Ten rules as to how one should practice singing.
c. First exercise in coloratura.

d. Cadences in coloratura.
e. The melody embellished with coloratura.
f. Rules and medical prescription to preserve the voice.

Conrad von Zabern, (Alsace) 1474, wrote exclusively for teachers of voice and for the clergymen of his time. He was himself a priest and musician; later, Professor of Theology at Heidelberg. He also wrote for those who could not study with a teacher.

Gio-Andrea Bontempi, 1695, was one of the pupils of the school at Rome. He says the methods there used were "imitation," to copy the teacher as closely as possible.

Domenico Pietro Cerone, 1613, says: "The teacher should not believe that rules and advice are sufficient for the development of his students; they want to see perfect work. Beginners do not observe so much what is told them, but what they hear and see."

Mersenne, 1637, says: "Many voice teachers have no voice to execute a song with beauty, nor can they embellish a song and many do not even articulate distinctly."

Blasius Rossettus, 1529, wants the teacher to begin with easy exercises and only gradually increase the difficulties. Ear training is needed. The teacher should sing a tone; the students imitate that and other tones on the syllable "La." The teacher then tells them wherein they have imitated correctly or incorrectly.

They are especially strict in demanding much and attentive practice. Exercises must be repeated very often. The more one practices the better becomes the voice. Daily you can hear that the church bells increase in sweetness and power of tone, though used.

Zacconi, 1592, gives the advice to sing often for friends and ask them if they enjoy the singing. Also you must train your own ear and judgment. What is the difference between the barking of a dog and the singing of one who cannot hear how and what he sings? A good singer sings more with his ear than with his mouth.

THE INTELLECTUAL DEMANDS ON THE SINGER

Bontempi, 1695. The voice students in the 17th century received more than a general education. The curriculum at the Roman schools was: One hour daily in the morning and afternoon in literature. Half an hour, theory of sound, voice, physiology. Singing, the study of counterpoint and instrumental music completed a rather long day's study.

They had to memorize to strengthen the memory.

One should sing without hesitation and fear. Singing should be full of life and feeling.

Many of the singers at that time were of noble birth; also it must be said their morality was nothing to brag about.

Maffei, already mentioned, thinks it more important to learn how to make the voice beautiful than to know the theory of music. He demands a knowledge of voice physiology. The singer must be able to sing loud and soft, high and low, sweetly and flexibly. He must enunciate the words distinctly. He must be able to hold his tones and never break into falsetto (head voice).

ABOUT THE ORIGIN OF VOICE

The old masters did not deny the possibility of developing the voice; on the contrary, they believed

even in self development. But in the main they expect nature to furnish the voice and the master to teach the use of it.

Both the teachers Banchieri and Doni (1640) say. The beautiful voice is a gift of nature or God. A singer should have a peculiarly sweet, vibrating voice,

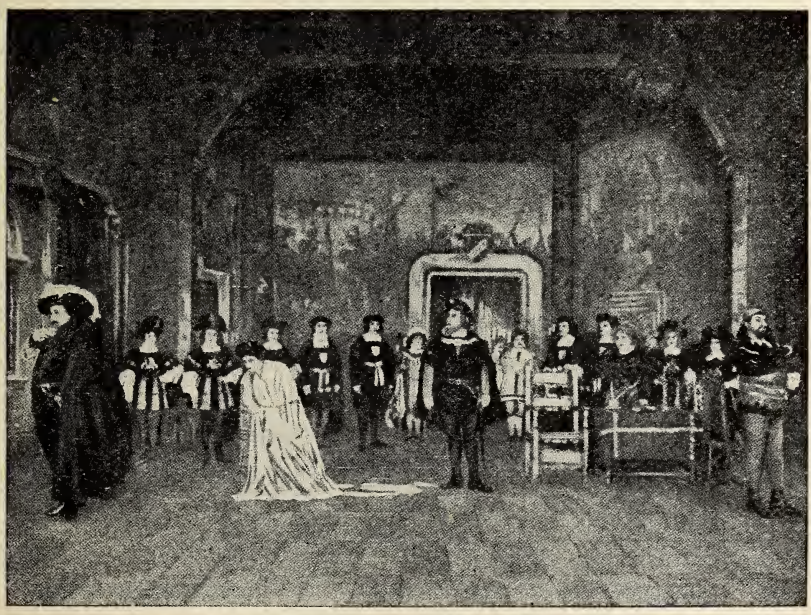

Fig. 115
Scene from "Don Juan"—Mozart.

a sound throat and larynx by the grace of God. Some advise that a teacher should not accept a student who is not thus gifted.

However, all of them supported the view that **any** voice can be made better, and that **all** voices can be improved. They believed that voices can be made better through singing of exercises. Mersenne, one of

the best known teachers, even said that a voice can be improved in many ways; that nature has produced very few perfect voices. To develop the voice, the student must learn to modulate and use his voice in an elegant style. He must learn not to open the mouth very far.

They acknowledge, however, that they had never succeeded in developing a voice to the utmost. At best their methods could only refine and make useful whatever voice the student had by nature. Defective voices, they said, are very hard to cure.

In 1640, Doni claims that the art of voice teaching, such as the ancients knew, was lost. He advised that the singer should refrain from eating injurious food. The ancients, he says, had special hygienic rules for orators. They hardened the throat with special drinks. The actors used a mask with a special mouthpiece to concentrate the sound, like a speaking tube. A bass singer in France, used a speaking tube when he sang. Tubes made of copper and terra-cotta and tuned to the different degrees of the scale were placed under the seats in concert halls and opera houses. These tubes reinforced the singers' voices. The singer is reminded of Roman rhetoric, especially that of Cicero and Quintilian, who placed much emphasis on phonetics.

The principle of starting a tone softly and by degrees swelling it to great strength was much used. Also the voice should never start very low or very high, but in the middle range. Cicero said that every voice has some individual middletone; that is the tone to start with, and by slow degrees the voice must be developed from that tone.

VOCAL HYGIENE

The old masters said truthfully that in a sick body there could not be a healthy voice. Loss of sleep, exhaustion, overwork, etc., weakens the functions of the body and the breath, and causes weakness of voice. Self-indulgence in eating, drinking, etc., causes the voice to break down.

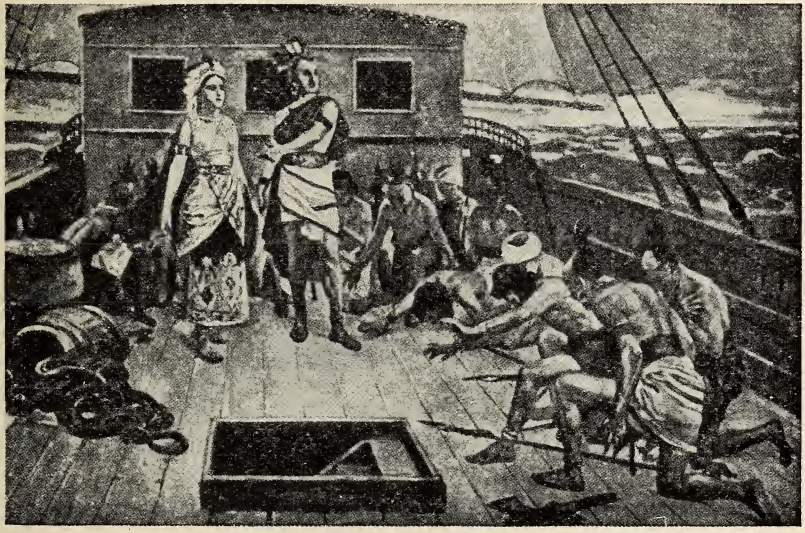

Fig. 116
Scene from "The African"—Meyerbeer.

Anything that helps the body will also help the voice, hence shower baths and walking are advised.

One should practice physical exercise four or five hours after eating. One should not eat too much, but also not too little. Choose easily digested food. Nuts of all kinds are almost prohibited. Sopranos, falsetto singers, and contraltos are advised to drink wine only mixed with water. Tenors and basses should use only little water with wine. Only in the winter should

singers drink wine without water, as it then warms the stomach and clears the chest, so that the voice may be strong.

Maffei, the physician-singer, gives the following prescriptions as a sane means to develop the voice, especially when the voice is dried out on account of much throat clearing:

Take four dried figs, remove the skins, add $\frac{1}{16}$ ounce of mint, $\frac{1}{24}$ gum arabic, pulverize them and form them into pills. Hold a pill in the mouth all night and another through the day. Or, take incense, rosin and mint; spread it on hot coals and inhale the fumes through nose and mouth.

Cerone says that the following will cure hoarseness:

Dissolve myrrh under the tongue, or eat raw garlic, or dissolve benzoic in water and drink it. Arsenium rubeum mixed with honey will clear the voice. If you chew cabbage and swallow the juice, the lost voice will be restored. Vinegar, if drunk before breakfast, will make a voice robust and clear.

Much attention was paid to the position of the body. It was realized that one sings better when standing upright than sitting, also that bending the head or leaning to one side interferes with the voice. One should sing with the voice but not with the movements of the body. Only the "glottis" should move. The body must be like a column. It is forbidden to move hands or feet. Some singers look like geese. They stretch their necks to reach high notes. The eyes, too, should remain quiet and not roll around as do those of crazy people. A mirror was used to watch that the face remains natural and not distorted.

POOR VOICES

As the purpose of the voice and speech is to communicate thought and to entertain, so the voice must be free from faults. A voice that offends the ear, that is coarse or harsh, or that stammers, is not to be tolerated. Such voices must be changed to sweet, clear and sympathetic voices. The cause of these faults is found in the incorrect function of the vocal organ. To speak through the nose, or through the teeth; to rasp or to speak gutturally, is a sign of incorrect use of the vocal organs. The teacher Doni says that such voices should be employed only in scenes where the spirits of Hell are made to appear.

GOOD VOICES

The good voices according to the old masters are those that can sing the "cantus suavis"—those with suave voices, that delight, elevate and can sing rapid passages. A voice must be sweet and lovely, even like a girl's voice. The French teacher, Mersenne, praises his countrymen for their sweet voices. No other people, says he, sing so sweetly or execute the passages so tastefully as the French. The Italians are more careful in delivery. They interpret more passionately, while the French are satisfied to please the ear to the exclusion of energy. The tone of the voice should be made to correspond with the song, sadness, joy, rage, peace, repose or energy must be felt in the tone. But an actor should not change voice and gesture on every word. When he speaks of Heaven he need not raise his eyes upward, or when he speaks of death, he should not tremble or shed tears.

THE ATTACK

Many and diverse opinions were current among the old masters on this all-important subject. Mersenne speaks of a hollow cavity in the chest, near the heart and the diaphragm, which causes an echo of the voice. If there was no palate and the voice came only from the glottis, the voice would be inferior and weak. Thus these old masters contradict each other.

Fig. 117
Scene from "Carmen"—G. Bizet.

Rossettus considered the palate and lips to be the most essential factors. The breath which comes from the lungs passes the larynx and breaks at the palate. Tongue and teeth form the speech and the lips control the breath current.

Maffei says: The voice is resonated from the palate after the breath is made to vibrate in the glottis.

Fabricius, another voice teacher, mentions the

cavity of the nose: The air in the pharynx is changed to sound, then it strikes the palate and from there the cavities of the nose.

The lips and the tongue were recognized as principal parts of vocal attack but the directions of how to use them are very vague and uncertain. Cerone mocks the singers who open the mouth as wide as a "stovepipe." Ragnoni says those singers who open their mouths so wide merely wanted to show their pretty teeth.

Rossettus says: No one can sing with a wide open mouth or with a yawning throat. Many a good singer is spoiled because pupils are taught to open the throat wide. One should not imitate wild animals which open their mouths wide when they roar.

Some teachers even say: Open the mouth little and do not move the lips. Some make faces and roll their eyes as if they would dissolve in tender feelings. This is not to be allowed. The attack was considered of just as much importance to the voice as the attack of the players on a flute or cornet. To obtain this desired attack they knew no method, except everlasting practice and the desire for a good tone, chiefly by imitating good singers.

Coclieus attempts a more definite description of the attack by his advice not to move the tongue; raising the back of the tongue is entirely wrong, says he.

In the school at Halberstadt in 1602, the students were taught to "hum" with closed mouth. This foolish method is followed by many modern teachers and claimed by them as a recent invention.

The best advice given them was to go to a good teacher and imitate him by constant practice. Nothing

is so hard to unlearn as acquired bad habits, so it is wise to select only the best teacher.

Jacconi says: One can develop a voice by singing very softly. He refers especially to the noblemen who learn to sing for their entertainments, to sing for friends and not for the public for pay. It is better to sing softly correctly than to sing loud and out of tune or with a harsh voice.

THE BREATH

The old masters paid much attention to breathing, but they were not at all agreed as to the method. One should take breath during rests, with ease and noiselessly.

Bovicelli says: Many singers are more remarkable for their breath than for their voice. It is not correct to take breath with each tone, like horses which shy at every shadow.

Rossettus and Cerone advise taking only moderate breath, thus opposing our modern athletic breath artists!

A quiet prolonged breath is advised for a sustaining tone. Much practicing of breathing is not advised by the old masters.

THE ART OF SINGING
By Giambattista Mancini

This justly celebrated teacher published his method in Vienna, where he was court teacher in 1774.

Concerning the voice in general, he says: "Nature in her generosity of giving away her gifts never puts them, save in rare exceptions, all in one person. The truth is that we find sometimes voices which are very strong, others are flexible and sweet, then some voices

have a wide range, others have a small range. The voice ordinarily is divided into two registers, one called the chest register and the other head register, or falsetto. Sometimes a voice has been found to possess the singular gift of singing all its notes in the chest register. (This is the voice of the great artists and the one which my method enables you to attain. E. F.) The chest register is sonorous and strong and without effort; but if a man sings up beyond "E" fourth space when the organs are not suitable, he will sing with much effort, feeling fatigue in the throat, and consequently the tone will be feeble. The great art of the singer consists in acquiring the ability to render imperceptible to the ear, the passing from one register to the other. (How this is done I have shown you in the lessons of the attack; tongue for all medium tones up to "E" or "F," glottis for very low tones and palate for all tones above "E" or "F.")

It is very important to know how to open the mouth. Do not open it too wide or the voice will be throaty, because the "fauces" (palate arches) will then be strained. On the contrary, if you do not open the mouth enough, your voice will be dead, or you will sing through the nose, or you cannot enunciate clearly.

The reasons are: The tongue is not in a natural position and the voice strikes against the palate and is thrown back into the throat.

I tell my pupils, "Boy, look—raise your head—don't lean it on the chest—no—not in the back either—there, that's right." "Straight and natural." Every pupil must shape his mouth for singing just as he shapes it when he smiles. The upper teeth show a little, and are slightly separated from the low ones.

What is commonly called "throaty singing" occurs

because the singer does not draw or sustain the voice by the natural strength of the chest, but tightens the fauces. The "fauces" are a part of the voice.

Mancini practically claims that only Italians and only those who come from Tuscany can learn to sing. The French language is not so suitable for singing, he says.

Nicola Antonio Porpora, 1686 to 1767, has been considered one of the greatest voice teachers. What he has left us are mainly exercises for flexibility.

Rossini, 1792 to 1868, one of the greatest tenor singers and a most successful and pleasing composer, wrote a method for singers, but beyond very general advice, he has nothing of any special benefit to the inquiring voice student.

Francesco Lamperti, a modern voice teacher, claims three registers, chest, mixed and in women's voices also a head register. Tongue should remain extended and the throat easy and open. Respiration is made much of; it should be from the chest and diaphragm. Unfortunately he recognized two qualities of voice, the open and the closed.

Tone should be formed in the bottom of the throat, the note should be attacked with great clearness and with full voice. He especially warns against sliding up to a note and says the tone should be produced with a shock of the glottis. He has done much mischief by claiming two qualities of voice, one open, the other closed. When you have a beautiful voice, would you "cover" it? The fact that he uses the term "cover" shows plainly that he tried to hide a poor voice by an artificial device, which did not correct the defect, but made it worse. That he advised the shock of the

glottis, shows that he knew nothing of anatomy. He is responsible for many mistakes of the present day

Manuel Garcia, the inventor of the laryngoscope, is the first of the great teachers who advised the study of anatomy, at least by the voice teacher. He was the first teacher who could show a student how to overcome a breathy and husky voice. He divides the voice into three registers, chest, medium and head. He also makes the mistake of classifying the quality into open and closed. For the open quality the soft palate must be low; for closed quality the palate is high. Neither of these positions of the palate is correct, nor is there in the real artistic voice either an open or closed tone.

To show you by what means he claimed to bring about a change in the quality of voice, I hereby give you his system. It consists merely of articulation, going from a normal vowel into a foreign or abnormal vowel to make it closed.

From the (open) vowel "A=ah" go to (closed) vowel O.

From the (open) vowel "E=a" go to (closed) vowel eu (in French).

From the (open) vowel "I=ee" go to (closed) vowel u (in French).

From the (open) vowel "O=oh" go to (closed) vowel u (in Italian).

None of the old masters ever recognized a change in quality. On the contrary, they held that if there is a change in the quality of the tone your voice is defective, and that the right sort of teaching must give you the ability to sing with an unchanged, even quality of tone. Besides this, any change in vocalization does not change the voice, it merely changes the vowels,

and who would want to sing an English song with a French or Italian pronunciation?

Garcia also advised thorax or chest breathing.

In Germany, by Ferd. Sieber and others, the power of "Will" was considered the most important feature. Will must induce the muscles of the larynx to tighten

Fig. 118
Scene from "The Mikado"—Sir A. Sullivan.

the chords more for high tones, less for low tones. The tone should pass over a flat tongue to the hard palate, where the tone is reflected and escapes the open mouth with increased force. They recognize two registers, chest and head. Will power would be all right to a certain extent if you knew exactly where to apply it; not knowing that, you will apply it at the point of least resistance, which is the jaw.

Delle Sedie, in France, and his followers, make the most of breathing and articulation. They also prac-

tice with closed mouth to start a tone, which, as we have seen, is not new, as they claim, but was known 200 years ago and condemned by all the old masters.

What I have written for you here has been gathered in the four corners of the earth and covers practically all that has ever been said or written about voice training, from the earliest time to the present.

If we define "Method" as a systematic, orderly rule or arrangement of a thing to be done, then it must be apparent to you, that until now we never had a method, but that some teachers practiced certain devices which in their "opinion" or experience helped some students. Another teacher held just the opposite opinion. Their experience taught them, as they believed, that exercises of an entirely different nature were more effective. In short, no two teachers ever exactly agreed as to the rules which must be taught and observed in order to train a voice.

Columbus started out to find a sea route to India and by accident discovered America. Thus it was with the so-called methods. By accident they produced a voice now and then; mostly the student and teacher produced nothing. Nowadays we have an exact mariner's chart and the navigator does not arrive in port by accident, he knows not only the exact route to take in order to reach his destination, but he knows the hour and the day he will land.

All voice is produced by the action of the vocal organ, therefore the training of the voice must be in reality a training of the vocal organ, just as playing the piano is the result of the training of the muscles and nerves of the fingers, hands and arms, **controlled by the mind!**

Therefore, we must train organs, rather than voice. If the organs act rightly and are under the control

of the mind, good voice **must** be the result in every case. If the voice is faulty it can only be because the vocal organ is faulty; correct that and the voice is **always** good.

In future lessons on resonance you will obtain further proofs.

EXERCISES TO LESSON XVIII
CHEST, HEAD AND FALSETTO VOICE

Always remember from first to last, that the tongue attack, like the poor, we have always with us. Never fail to practice the tongue attack daily and whenever you can, to the end of the course and even after that. The main practice, the exercise which will strengthen the tongue, has not yet been given, for the simple reason that you are not ready for it. Many other things must be understood before you can fully understand the importance—no, the absolute dependence—of all superior voices upon this singular exercise.

While you are getting a most comprehensive education in all matters that pertain to the voice, you, of course, want to use all the voice you now have to the best advantage, and much can be done with the voice nature has given you. In this connection I want to mention a point that came to my notice a few days ago. A lady of about 32 years of age called and told me that she had always wanted to sing, but was afraid she had no voice. An examination showed that she had everything to make a fine singer in a very short while. In the course of the conversation she told me that as a child of about 4 years she was often called upon to sing for strangers, but that one time she noticed that the people made fun of her singing, and from then on she never sang in public. Such things I have

heard before. It only shows that the wise man was right when he said one should be very careful in the choice of one's parents. But one thing she said was new to me. She is of a normal, pleasant temperament and yet she said that she had never been able to laugh heartily, only in a little giggle. Now, the day before, a young man from a neighboring state called at my studio. He stammered rather badly.

Would you believe that the two cases, the lady and the young man, were almost identical? In both cases there was a naturally good voice. The hyo-glossi muscle was very strong in the stammerer, markedly so, but neither of the two could use this muscle to good effect. Through some cause they lost the use of the muscle, with the result that, in one case, singing and laughing was made impossible; in the other case, stammering was the result. Both will be absolutely cured.

This lesson is a special lesson for the singer, but speakers should also study it, because it gives them a further experience and insight into the matter of different voice attacks. Of course, I do not expect the speaker to sing, or to study the songs which I am going to mention, but those of the speakers who are public orators, especially actors, often need a change of voice for special effects, and this lesson will help toward that end. I am reminded especially of Talmage, whom I knew personally. His style was different from any other speaker. When other speakers gradually work up to the climax of a sentence, that is, become louder, more emphatic as they approach the most important part of a sentence, Talmage did just the opposite. He started loud and fell to a whisper, so that you had to strain your ears to catch his words. It was very effective because it commanded the closest attention and abso-

lute silence. Just such effects can be learned through these lessons on attack. Of course, speakers must use

Fig. 119
Mrs. Siddons as the Tragic Muse—Reynolds.

their own judgment when and how to apply it. It is said that the famous English actress, Mrs. Siddons, meditated hours daily upon her subject, studying each nuance and effect before delivery to the public. When

a subject is mastered in that way, success is always assured.

The stammerer will also derive great benefit from this lesson; to him it is of the utmost importance to know every vocal device, for after all is said and done, the stammerer as well as the speaker and singer must cure himself, develop his own voice. No one can do that for him. The only successful teaching is to show you how to help yourself. There is no short cut to vocal development otherwise than by knowing and practicing an exact method.

CHEST TONES

By chest tone is meant every tone, whether low or high, that can be made strong without the slightest effort. The low tones vibrate in the chest and naturally the strong tones vibrate more than the weak tones, hence all strong tones were termed chest tones. This "chest tone" you can develop from the highest tones as well as the lowest by means of the tongue attack. When the hyo-glossi muscle is made very powerful, your voice will be chest throughout the scale, equaling the voices of the international big singers.

The head tone is not made in the head, but the medium voice of the high voices and the higher notes of low voices are felt more in the head than anywhere else, hence the name head tone. But most singers have the "tongue beat" in this range and it should always be employed. The range of these medium tones is in the high voices usually from "E" on the first line to "F" on the fifth line, and for low voices from "A" below the line to "C" in the third space, or even a little higher. All these tones can usually be sung with the tongue beat. By this time, I am

sure all of my students can employ the tongue beat for these medium tones. Now the high voices who cannot employ the tongue attack below "E" on the first line, may use the glottis attack for all tones below this note. Again the high voices who do not feel the tongue beat above "F" on the fifth line, may still sing considerably higher by using the palate attack; in fact, they can go very high with this attack and the effect in small halls or in church is very pleasant and effective. The palate attack is especially useful for parlor or in the home singing. It is easy to learn and can be used almost at once, while the tongue attack for the higher tones often requires a very great deal of practice, and a long time is needed to create the almost abnormal strength required for all tones.

Naturally low voices can usually employ the tongue attack from "A" below the line to "C" in the third space. They can, however, go still lower by employing the glottis attack; often that will carry them 3—4 tones lower, enough for all practical purposes. The glottis attack is sometimes even stronger than the tongue attack, but not so musical and not so refined as is the tone with purely tongue attack. The low voices, like the high voices, can also employ the palate attack for the tones above "C" in the third space, but they should, as a rule, not go beyond "F" on the fifth line. Both of these attacks, the glottis and the palate attack, can be quickly learned and employed. I have not told you this before, because I wanted you to thoroughly understand all about vocal attack before you do too much singing; from now on you can sing all you want to. Be sure to use the tongue attack for the medium tones, the palate attack for high tones, and the glottis attack for low tones, until you can employ the tongue attack for the entire range.

THE FALSETTO VOICE

Male sopranos were formerly in high repute, in fact, many of the great singers of whom history speaks so much were male sopranos, that is, the boys' voices were preserved artificially, by means of an operation, so that the voice did not change as is usual with boys.

Boys' voices, girls' and women's voices, sound an octave higher than the normal male voice. That is to say, when a man, whether a bass, baritone or tenor, sings the middle "C" on the piano, the "C" under the first line of the staff and then a boy, girl or woman, whether alto or soprano, sings the same note, it sounds an octave higher in the female or boy voice, though the notes are now written alike for all voices.

But the normal male voices can imitate a female voice by singing a thin, light tone which will sound an octave higher than written, just as is the case in the female voice. In the same way an alto can sing soprano passages and some sopranos, like Ellen Beach Yaw, can sing an octave higher than high "C."

This ability to change the voice an entire octave higher than normal is called "Falsetto." It is as the term indicates, a false or artificial voice. It should be employed only for special effects, such as echo effects, or here and there for an extra high note, or for bell-like effects.

The falsetto voice, like the head voice, is attained only with the palate attack. In reality this eliminates the tongue attack and is therefore artificial and not normal. It should be employed only occasionally, because in the first place it tends to strain the voice if used too much; secondly, it becomes monotonous.

The following list contains songs of a very limited range, suitable for all voices, as the lowest note in any

song is only "C" below the staff and only one song goes as high as "G" above the staff.

First try them over on your piano or have some one play them for you, then play the melody, making sure to get the correct time and rhythm. Thus impress your mind **before you attempt singing.** After that insert little finger under the tongue and sing each note of the melody to "ha." Observe carefully on what notes you feel the tongue beat. Do not try to make the beat. It must come automatically. Merely think that all tones come "out of the tongue." Forget throat, head, even breath, and concentrate upon the tongue. If you merely leave your tongue free and loose, you can, by now, I am sure, obtain a "beat" on nearly every tone—provided, of course, you have practiced the tongue exercises regularly, as I have instructed you to do.

The very light voices and the high sopranos and tenors may find that there is no beat below "E" on the first line and that the tone is breathy, husky and poor below that note. To get the lower notes they should use the glottis attack, as taught. First go through the glottis exercises and then sing the notes in the way explained in glottis attack. Do not, however, use the glottis attack above the note on which you can obtain a tongue attack.

The strong voices, whether male or female, should now have no difficulty in obtaining a tongue beat for **all** notes from middle "C" to its octave.

Most sopranos and tenors will be able to use the tongue attack to "F" on the fifth line and should use that. But basses, baritones and altos may find that the tongue attack cannot be used above "C" in the third space. The notes above that should then be studied with the palate attack. The blending of the

registers will come in a later lesson. For the present do the best you can. After studying the song to "ha" use the words, still with the little finger, later without.

Read the words loud with little finger under the tongue before you sing the song.

LIST OF SONGS FOR MEDIUM VOICE

Because I Love You, Dear—Dorothy Foster. Compass D to F. Price, 60c.

Love, Here Is My Heart (new)—Lao Silésu. Compass C to E flat. Price, 60c.

A May Morning (old)—L. Denza. Compass D to E flat. Price, 60c.

Beauty's Eyes (old)—Paolo Tosti. Compass E flat to E flat. Price, 60c.

That Sweet Story of Old (Sacred)—J. A. West. Compass D to E flat. Price, 50c.

Throw Me a Rose (new)—E. Kalman. Compass D to G. Price, 60c.

Select any songs you choose; if you cannot get them through your dealer, send the price and we will order them for you. Please add ten cents for postage on each order.

The next lesson will contain further instruction relating to these songs. Then will follow detailed instructions for speakers and defective voices.

EXAMINATION QUESTIONS ON LESSON XVIII

1. Who was considered the greatest orator among the ancients?

2. How did he develop his voice?

3. Can we learn anything of practical value to the voice from the old Teachers of Voice?

4. What is meant by chest voice?

5. What is meant by head voice?

6. What is meant by falsetto voice?

7. What must be trained, the voice or the vocal organ?

8. On what notes (if you are a singer) do you feel the tongue beat?

9. What is the difference between boys' and female voices, and men's voices?

10. Can you employ all three attacks now?

LESSON XIX

CAUSES OF A DEFECTIVE VOICE AND HOW TO CURE IT

HOARSENESS AND HUSKINESS

It has been estimated by reputable physicians that from two to five per cent of all children in the public schools of the United States, suffer from some kind of vocal defects. In New York City alone, the number of defective voices among school children is 200,000. I will not estimate the number of men and women whose voices are more or less defective, but they would reach several millions. These estimates are for distinct and special defects, such as stammering, lisping, stuttering, cleft palates, and lost voices.

To these should be added the very large number of people whose voices are habitually hoarse, husky, shrill, nasal, breathy or monotonous. Those suffering from catarrh and—I state it as a matter of personal experinc e—some forms of heart and lung diseases, should also be included.

Who can measure the amount of suffering, the mental and physical discomfort and the pecuniary loss to the people of the entire country, due to vocal defects?

The general health of an individual of course has much to do with the condition of his voice, and again the nervous temperament will in large measure affect the quality of one's voice. A sweet-tempered person will be found to have a much more pleasant voice than an ill-tempered person.

The universe and every part within it, man included, is governed by two forms of energy: the positive and negative. One force is constantly construc-

tive—building up; the other is just as constantly destructive—tearing down. In the light of religion and modern science, the moral instinct in man must be called upon to assist the constructive force. The moral will, the determination to develop, to grow, must be present in every person and in the measure that this moral force is called upon to assist the positive force, just so much will be the growth of the individual morally, mentally and physically. This does not mean that he must merely decide to develop all around or in a certain direction. No. His will power must be so strong that he will **seek the means,** search for the best way to develop and then work with all his might toward that end. Many are born weak, but more let themselves become weak. If they are not actively assisting the destructive force, they are at least neutral and weak. Gradual dissolution will overtake them.

The constructive, binding force in energy manifests itself as follows: **Gravity,** or the attraction between masses which tends to bring them together; **Cohesion,** or the attraction between the molecules composing all visible matter; **Chemical Affinity,** or the attraction between the atoms or chemical elements of which all molecules are composed.

The destructive force in energy manifests itself as follows: Force which tends to separate material masses from each other, that is **Repelling Force;** Force which tends to separate material molecules from each other, as for instance, **LIGHT and HEAT;** Force which tends to separate atoms from each other, as **Light, Heat, Electricity, Pressure, Percussion, etc.**

All physical activities result from the action and reaction between these sets of opposing forces. The particles of which matter is composed would combine into a solid mass by reason of the pull of the binding

forces, unless this were prevented by the push and resistance of the separating forces. Or, on the other hand, these particles would be scattered and dissipated into space by the separating forces, unless they were prevented by the pull and resistance of the binding forces. In the same way the earth would fall into the sun by reason of the action of the binding forces, if this were not prevented by the action of the separating forces. On the other hand, the earth would fly off into space—far away from its sun—by the action of the separating forces, were it not for the resistance and pull of the binding forces. The balance between these two sets of forces keeps the corpuscles in place and yet in motion; the earth in place and yet in motion in its orbit around the sun. Were this balance lost chaos would result, and the cosmos would perish. With these two powers in conflict, the universe is the theatre of ceaseless redistribution of its contents, whether in the sweep of the stars through space, or in the vibrations of the invisible particles of the human body.

Life and death are in constant conflict. A child is born, weak and helpless. Statistics prove that the average weight of a child at birth is 6½ pounds. At the end of the first year its weight is 18½ pounds, so that its body has increased threefold. At the end of the second year the weight is 23 pounds. In the first year an increase of 12 pounds takes place, in the second year only 4½ pounds. From then on the increase in weight is very slow, with many variations up to the 12th or 13th year, when there is again a rapid increase in weight and development up to the 15th or 16th year.

The energy which so far has developed the body, gradually becomes less after that period, the weight increases slowly until about the 30th year, to remain about the same till 40, after which, under normal condi-

tions, the weight decreases. We know that the substance of our organs must be constantly renewed, but the ability to do this is steadily diminished as we grow in years. Food is taken into the digestive organs and converted into blood, which is the fluid through which all organs of the body receive their substance. We see therein a constant force of creation; the dead substance of the food is converted into pulsating life. But this creative energy diminishes as we grow in years.

However, we have learned that the deterioration of many organs in our body can be arrested. The muscles which have become flabby and weak can be made strong through proper exercise and food. It has been observed many times that in greatly advanced years a new set of teeth have grown, also that the white hairs in many instances have fallen out and been replaced by hair of natural color.

As we are concerned only with the organs of voice, only the muscles which operate in voice need be considered. The two forces, constructive and destructive, operate in the vocal muscles as they do in all other parts of the body. Many persons are born with weak voices; that is, with weak vocal muscles, hence they are more liable to disease because they have not the power or resistance natural to those with strong vocal muscles.

Again, many people are born with naturally strong voices, but through ignorance or accident lose that endowment. In both cases the weak voice tends to become still weaker and this general deterioration of the vocal organs often affects the entire body, the mouth, throat, lungs, etc. Enlarged tonsils and adenoids may not be the result of weak vocal organs, but I am sure that persons with strong vocal organs do not usually suffer from enlarged tonsils or adenoids. I have never

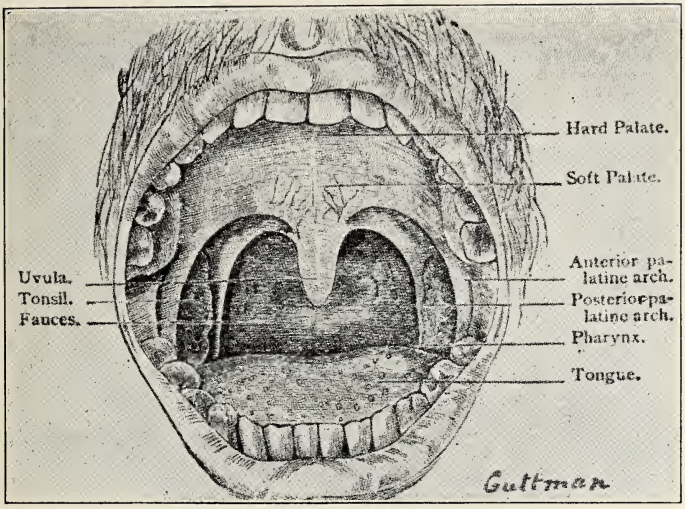

Fig. 120
The healthy Vocal Organ

known a case where the removal of tonsils either helped in strengthening the voice or made it easier. Weak voices are not made strong by the removal of the tonsils. On the contrary, I know of cases where the enlarged tonsils became normal after the voice had grown stronger, supporting my own belief and that of many physicians, that when the vocal organ is made healthy and strong, other diseases will disappear. In the case of adenoids I am of the opinion that they should be removed. However, I would give the voice a chance first, before deciding on an operation.

Hoarseness, huskiness, sore throat, nasality, can all be cured through the exercises which will develop the voice. These symptoms are often caused (when not due to a severe cold) by weak tongue muscles.

Strained voices, short breath and monotonous delivery are the result of weak tongue muscles.

Shrill, hard, staccato voices are caused by the overuse of the masticating muscles. These must be eliminated in favor of the tongue muscles.

Stammering, lisping and stuttering are caused by an unwieldy tongue. The tongue is usually strong in these cases, but not under control. Even those with cleft palates usually have the same defect. They do not talk with the tongue, but with the lips and palate only, eliminating the most powerful factor in all speech, —the tongue.

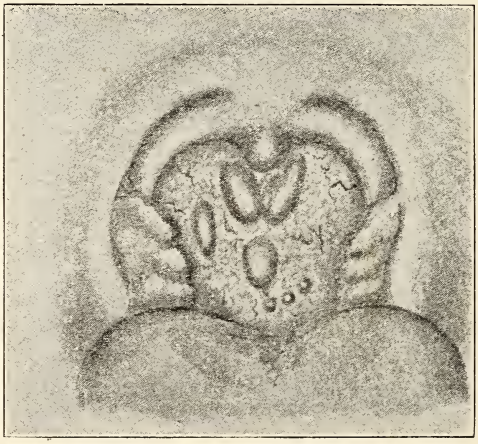

Fig. 121

Diseased Vocal Organ.

Large Follicle on Pharyngeal Wall. Dilated Blood Vessels with Enlarged and Adherent Tonsils.

Lost Voices. Why is it that not only amateurs, but great artists often lose the most priceless gift in their possession? Here, as in other walks of life, the price of success is everlasting vigilance. A great gift, like a great business, must be guarded and daily won again. But in the case of the singer or orator, how could he guard his voice when he did not know the truth about voice?

Since nearly all voice teaching has been merely guess work and assumption, he had nothing definite to guide him and the advice which others gave him was usually misleading; it merely made his case worse instead of better. Nor could the physicians help him. Sprays and douches are only of temporary value. They do not remove the **cause** of a defect in the voice. The great singers, all those that sing with ease in a full voice throughout the entire compass, are such only because their tongue muscles are exceptionally strong. Unfortunately they do not know this; if they did they would never lose their voices, but to the contrary their voices would become even better and endure to the day of their death.

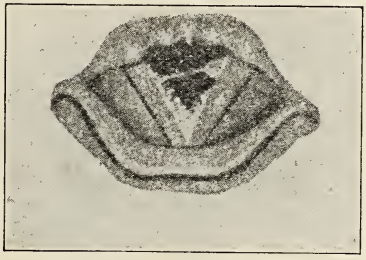

Fig. 122

Diseased Vocal Organ.

Chronic Catarrh—Thickened Mucus Adhering to the Vocal Chords.

But as they do not know this, they seek for something, they know not what. Usually they blame breathing and strive to develop the breath. Even in that they have no scientific and absolutely correct basis to work from. A strong contraction of the abdominal muscles seems to help at least temporarily, or, worst of all, they contract the jaw muscles. That also gives needed aid for a short time. Sometimes they are taught to raise the palate, to sing against the face, etc. If

they follow that advice their voices become thin, so, wherever they look and whatever they do the outcome is the same, loss of voice.

Then there is that vast majority of amateur singers who had sweet voices when they were young, but the voice lasted only a few years and then went to pieces. What has happened? In the first place they never had a really good voice. They had sufficient strength in the tongue muscles to stretch the vocal cords up to F on the fifth line, but not beyond. Their vocal organ, owing to their youth, was still pliable. It could do things which a settled and hardened vocal organ cannot do. But if they had known the limits of their voice, they could easily have preserved them and by practice made their tongue muscles stronger, till, finally, their voices would have become equal to those of the great artists.

Now, using my method, they cannot only regain the voice, but in a short while make it a better voice than it has ever been, and gradually become truly great singers or speakers.

Of course, what has been said about singers applies equally to speakers. They, like the singers, lose their voices. The same cause and the same remedy will restore their voices.

If you have the patience and perseverance which is needed to accomplish any great work, there is nothing that can prevent you from becoming either a great singer or speaker. Just stick to it.

EXERCISES TO LESSON XIX

All voice defects of whatever kind can be traced to two causes. One of these causes is a general weakness, especially of the tongue muscle. The muscles

which are the principal agents in stretching the vocal cords are the hyo-glossi muscles.

When these muscles are weak, a weak voice, both in speaking and singing, is the result. But the trouble goes far deeper, for this weakness is the direct cause of a husky voice, hoarseness, inflammation of the vocal cords and of the throat, swelling of the tonsils, frequent colds and sore throat, coughs, shortness of breath, constant clearing of throat, too much saliva and general irritation. Nervousness and despondency often follow. Even cases of pulmonary affection and consumption can be traced to weak hyo-glossi muscles and consequently to a weak vocal organ.

Fig. 123
Pathological Effect of Throat and Voice Diseases.

What is the cure?

The only **real and permanent** cure possible is the strengthening of the hyo-glossi muscles as taught in these lessons.

Place a finger under the lowest bone of the larynx; that is, under the cricoid or ring bone. Hold the finger there while you speak or sing. If this bone is drawn downward with the throat, it shows that the upward pulling muscles are inactive.

Make the same test and sing or speak again. If this bone rises upward, then you may be sure that the upward pulling muscles are very weak indeed, even weaker than when the larynx is being drawn downward.

Why this is so, is being explained in the theoretical parts of the lessons.

When the upward pulling muscles are weak, much practice is needed to make them strong, and in some cases it may take a very long time, but regular practice will do it.

If you have the patience, the reward will be wonderful indeed, both in voice and general health.

Now, as you want to and must use the voice every day, exercises have been given that will give you the best command over the natural voice which you now have, and much can be done if you follow all the directions. Another valuable lesson in making your present voice immediately available, follows herewith.

The second cause of vocal defects must be traced not to the weakness of the vocal muscles, but to the very general ignorance in using the strength of the vocal muscles to the best advantage. Strange as it may seem, many, yes very many people, have strong vocal organs, but they are not making good use of the gift which is theirs. For some cause or other, they have lost the use of the essential muscles, with the result that the voice is hard, shrill, disagreeable or, still worse, as is the case with many, they stammer, stutter or over-

lap. They talk or sing out of the throat or with stiff jaws, through the teeth or through the nose.

What is the cure?

The only legitimate and permanent cure for all these troubles is to use the tongue at all times.

1. Place your thumb, the fleshy part, against the chin, with the curved forefinger in front, the thumb under it, just as if you were pinching the chin between the thumb and first finger. Press your thumb somewhat upward into the fleshy part of the chin. Close your mouth and observe whether the flesh under the chin (nearest the bone, not near the throat) swells or becomes hard.

2. Keep the thumb under the chin as before and talk first softly, lightly, then in your natural, ordinary way and then loudly, or sing first softly, then naturally, then loudly.

If the flesh under the chin swells downward very much and especially if this flesh becomes hard, be sure you are **wrong.**

3. Make a fist. Close the mouth and place the fist under and against the bone of the chin. Press the fist rather forcibly upward against the chin and try to open your mouth. Notice that you feel a tight sensation in the jaw, especially near the ears; somewhat as if you were trying to crack a hard nut with your teeth.

4. Do again as in No. 3 and now while you are trying to open your mouth in spite of the strong pressure of your fist against your chin, suddenly let go with the fist, that is, suddenly withdraw the hand from the chin and notice now—a sudden relaxation in the jaw, a loose, flexible jaw. Dig your thumb into the fleshy part of your chin and notice that now your chin is loose and remember that while speaking and singing

the chin should be almost as loose as it is when you relax.

Do not think, because you are holding your jaw and chin muscles very stiff, that this is the cause of your bad voice, of stammering, etc. Just the reverse is the truth.

Because you use your voice badly, because you stammer, etc., that is the **reason** why your muscles are **stiff.**

The real reason is that you are not using your tongue and all your troubles arise from this fact. Here are further proofs.

1. Merely open the mouth and look at your tongue. Is the tongue drawn away from the front teeth? Is the tongue narrow? Is it up in the back? Does it make a hump? Does the tongue twitch or tremble?

All of these faults are an indication of the wrong use of the tongue. If your tongue is right and if you had the proper control over it, it would lie quietly and smoothly in the mouth, filling the space between the teeth.

2. Put your forefinger inside the mouth and touch the tongue near the back, just where it goes down into the throat. Is it hard?

Speak or sing as well as you can, and at the same time touch the tip of your tongue, noticing carefully whether this tip remains loose. If the tip becomes hard or still, then you are not using your tongue properly at all.

The stiffer the tongue, the worse you talk and the harder is your voice in singing.

This stiffening of the tongue is usually the main physiological cause of stammering and stuttering. The stammerer will find that on a syllable where his tongue's tip is loose, he will not only not stammer, but

that his voice will be usually good. On the contrary every time that he stammers, he will find these things: First, the tip of the tongue is hard; second, the tongue is drawn back from the front teeth; third, the back of the tongue is way up; it forms an arch or hump; fourth, the entire tongue is hard and stiff.

Naturally he stammers with a tongue in such a condition. It is surprising that he can even emit any sound at all.

When the tongue is stiff and hard, it will cause the chin and jaw muscles to become stiff also. Now when this condition is much exaggerated as is usually the case with stammerers and stutterers, of course speaking or good singing is made very difficult, if not impossible.

When the complete control of the tongue has been learned and the habit acquired, to use this control in speech and song, there will be neither stammering, stuttering or harshness possible.

Always think the tongue loose and flexible, not only when you speak or sing, but all the time!

All those with an unwieldy tongue, with a stiff jaw and chin, must patiently persist in all the tongue exercises. The final and most important exercise for the tongue is still to come. It will be given as soon as you are ready for it. You can afford to be patient, because you have a great deal of strength. You are really better off than those with very weak tongue muscles. As soon as your tongue is free and under your control, you are finished. The voice and speech are already yours.

HIGH OR LOW TONES, ENLARGED COMPASS.

The following exercises are similar to some already given, but they need much repetition, and they must become gradually more and more exact and precise.

The deep voices, Bass, Baritone and Alto can enlarge their compass as well as the high voices. A deep, low voice is especially effective for speakers in very serious, solemn discourse. If the tongue beat ceases at B, A or G below the musical staff, you can obtain still lower tones if you continue the glottis attack down the scale.

Close the mouth and clear the throat very lightly, as if removing phlegm, gradually go into a continued humming, like a bumble bee, but **never** through the nose. It must feel way down in the throat, but so easy and free that there is not the slightest strain. Place a hand on the chest and notice that the chest vibrates strongly. Think that there are two thick pads of flesh down in the throat.

1. Do this humming or growling and gradually count "one," "two," "three," "four," etc., as long as your breath lasts. Expect these counts from deep down in the throat.

2. Repeat the above, but descend in the scale. Go lower, as low as you can go without any strain. Your naturally lowest note is the note that you can speak or sing without strain. Do not go below that.

The high voices, Soprano, Tenor, Mezzo-Soprano and children's voices, can enlarge their compass very much, and quickly, by practicing and utilizing all that has been said about the palate attack and the falsetto. In fact, it is rather easy to obtain high notes, but no one should employ them very much. Always and all the time remember that the middle voice is the main and principal part of every voice; the extremely low and high notes are only for occasional use. There is no special value or virtue in a **very** high or **very** low voice. The middle range is always best and that is the range

wherein you can obtain the tongue attack comparatively easily and in not too long a time.

First whisper "ha," "ha," "ha," very low; then medium and then gradually higher. Notice the whisper sounds very high and thin, but clear and not breathy. Never **"breathy,"** remember that.

You will gradually feel that the breath or tone tries to rub through the upper part of the palate, like a thin white line of breath all along the roof of the mouth. The throat must remain free. Notice that neither the chest nor abdomen move perceptibly until the breath is exhausted.

1. Whisper the sound of "F," fifth line. Gradually change this whisper into a tone. Do not try to make it strong, merely get the pitch. Do the same to "F" sharp, "G," "A" flat and "A."

2. Having caught on to this attack, do not whisper first, but start the above tones at once, at the same place where you whispered, expect only a light, thin tone.

3. First whisper "one," "two," "three," etc., then as in 1 and 2, go from whisper to tone and later start counts without whisper, but sing them.

4. Proceed in the same way, but now select sentences. First whisper them. Start the whisper low, then higher and higher. In the same way speak or sing the following lines, by L. H. Bailey, in Countryside Magazine:

One day
I went
To the fields to rest.
The sun
Hung low
On the rim of the West.
A sparrow
Chirped
As it dropped to its nest.
And my soul
Had found
The boon of its quest.

For instance, start the first line low, the second higher, the third still higher, and so on. The singers should first speak the lines exactly like the speakers and only after they have learned to speak higher and higher should they sing, and when singing be **very** careful that each syllable is as distinct in singing as it was in speaking.

All through these lessons the singer has a double task. He must learn to apply the lessons first to speaking and later to singing. A singer should be both orator and a singer.

SINGING

The Six Songs—(*Continued*)

1. In the song, "Throw Me a Rose," the entire first part should be sung with tongue attack. The second part, "Come Away," may employ the palate attack, especially all the notes from E to G. The chorus, of course, should be sung with tongue attack.

2. "That Sweet Story of Old," use tongue attack, excepting the passage "as lambs to His fold," which can be made very effective in the palate attack, especially if you retard somewhat. The last passage, tongue attack.

3. "Beauty's Eyes," use the tongue attack from the first up to and including the words, "For straight and sweet my pathway lies," after that employ the palate attack, if you cannot use tongue attack. But at the words, "While I gaze in your dear eyes" use glottis attack, sing slowly and emphatically, the same for the other verses.

4. "A May Morning." All of this should be sung with the tongue attack, except with the last "Come out." This might just as well be sung with the palate attack; if you want to sing the high notes, it will sound very effective, even if the tones are not strong.

5. "Love, Here Is My Heart." Tongue attack for the entire first page, after which as follows:

"Love, here is my heart" ..... Tongue Attack
"One rose for your hair, yours if you keep it today,"
..... Glottis Attack
"Yours, if you throw it away, whether you now tear it apart" ..... Glottis Attack
"Love, here is my heart" ..... Palate Attack
"One rose for your hair, etc." ..... Glottis Attack
"Whether you now tear it apart" ..... Tongue Attack
"Or choose it to wear" ..... Glottis Attack
"Something to" ..... Glottis Attack
"Kiss or to kill, etc." ..... Palate or tongue

The second verse should be sung in a similar way; for high notes use palate, for medium notes the tongue, and for low notes the glottis attack.

The conclusion, "Or forget, here is my heart," should be studied very carefully and practiced first as a very thin and high whisper; only after you succeed with the whispered words should you sing them. The effect will be very fine if you take the high notes. But if you prefer the low notes in this passage, use the glottis, but sing the words slowly and emphatically.

6. "Because I Love You, Dear"—by Dorothy Foster, is a good test for the tongue attack throughout. If you have learned to drop the rear part of the tongue easily and loosely enough, you cannot help having success with this song. Almost anybody, even if they have never sung before, should be able to sing this after two or three trials and make a success of it.

Other songs will follow later in the course. The ability to swell, to sing loud and soft, will also be taught and applied to the songs later on.

EXAMINATION QUESTIONS ON LESSON XIX

1. What is the physiological cause of continued hoarseness and huskiness and weak throat?

2. What is the effect of positive energy?

3. What is the effect of negative energy?

4. Why do many persons stammer?

5. How can you quickly obtain low tones?

6. How can you quickly obtain high tones?

7. Which of the three attacks taught is easiest for you now?

8. Can you speak or sing low with ease?

9. Can you speak or sing high with ease?

10. Which of the songs (if you are a singer) is most suited to your voice?

LESSON XX

THE LAW OF MECHANICS
WHY VOICE STUDENTS FAIL

Most students fail because they lack an exact and scientific method of instruction. It is known that by lowering the larynx the voice can be made stronger, and that by raising the larynx higher tones can be reached. In neither case, however, are the tones really good. The lower tones become rough and throaty, the higher tones shrill or thin. The habit of speaking or singing entirely from the vocal chords (glottis attack) is also bad, because in this case the vocal chords rub against each other and become inflamed.

Good breathing is of great value, but the breath can only set the vocal chords into vibration; nothing more. In a correct vocal attack the breath is instantly converted into tone. The much advised humming of the tone, or focusing it to the front of face, is of no permanent value. It merely deceives the singer for a time. No vocal device, of whatever kind, can possibly assist the student in his search for a perfect voice.

Nature provided the only means whereby the needed stretching of the entire vocal material can be automatically accomplished without causing the singer any undue exertion. The condition ensuring such a happy result is that the vocal organ must be equally strong in all its parts.

When we consider such triumphs of modern mechanics as the building of the Panama Canal, the St. Gothard Tunnel, or the luxurious ocean steamers, and the aeroplanes, the first question which suggests itself is how were they created? Naturally, first in the brain of the engineer; secondly, they were reasoned out, designed and sketched on paper, and not until then could

the practical work be started. If the engineer's measurements and judgment were correct, then his theory must prove correct in practice.

Just so in the vocal apparatus. When all that is necessary to make a perfect voice is understood, then clear thinking and sound reasoning will be sufficient to show the way toward perfection, and practice will demonstrate that this reasoning was correct.

I have now given all the details of the mechanism which operates in voice. If all these details work together in unison, the voice will be the best that is possible to the individual. If not, then we must find out wherein one or more of the details failed to operate, and correct our mistake. No other way has any chance of success.

Only the muscles from the tongue to the hyoid bone, Figure 30, need concern us in the search of equal forces, for the following reasons: First, these two pairs of muscles are located in the center of the vocal organ. They are attached indirectly to the palate above and directly to the larynx below. Therefore, they naturally pull both ends toward each other. Secondly, these tongue-to-hyoid-bone muscles are the only ones in the entire vocal organ which are entirely free; that is, are nowhere attached to fixed bones like the other muscles. Also they have a separate nerve supply. Thirdly, because these muscles are free, they can be brought under the voluntary control of the singer or speaker. If he uses these muscles, the tone will be large and beautiful. If he omits them, the tone will be thin and lack the necessary quality.

Although the above facts have for some time been known to anatomists and available to singers as well, yet both have failed to grasp their importance as

related to the voice. The anatomist naturally thought of them only in relation to medical service or the operating table; the singer and musician concerned himself very little, if at all, about the vocal anatomy. Firstly, because the musical temperament is usually opposed to a scientific analysis, dealing preferably with emotion. Secondly, he had been taught that if he thought of the vocal instrument he would become self-conscious. He was told to think in tones, and that then the instrument would take care of the rest. The real reason why the control and development of all these important muscles did not suggest itself to the singer was because these tongue muscles cannot be felt.

It may seem strange that this group of muscles, whose importance cannot be overrated, should not also be strongly felt. But because these muscles are nowhere attached to a firm bone, they leave no sense of exertion or contraction behind them, especially when, as is the case in singers with exceptionally fine voices, these muscles are almost abnormally strong. This is also the reason why good singers and speakers feel no exertion, why the action of the vocal organ seems to become freer the longer they sing or speak. This freedom and strength of the tongue muscles accounts also for the free tone and the easy execution of the most difficult passages, as well as the many shadings and special effects employed by the great singers.

Now, examining Figure 30 again, we may logically deduct certain mechanical facts. Suppose that the three pairs of muscles which grow out of the breastbone (No. 6) and the collar bone (No. 7) into the hyoid bone (No. 5), and the thyroid cartilage (No. 2 A-B), and overlapping the cricoid cartilage (No. 4), have altogether a contractile power of, say 25 pounds. Then, to offset their downward pulling force, we must have the equal of 25 pounds of upward pulling force. Now the

palato-pharyngeus muscle, which pulls the thyroid cartilage upward, is considerably thinner than either of the three downward-pulling muscles. Also it is too long and too far from the object it is to move, and for these reasons it cannot be as strong as either of the opposing muscles. Now we have the two up-pulling tongue muscles (No. 10, A-B) to supply the missing power. It follows that these tongue muscles must be of exceptional strength. Two facts, however, operate against these muscles: one is that they are nowhere attached to a firm bone; the other that singers are not even aware of the existence or importance of these muscles; hence the singer cannot help himself.

THE REMEDY

When these tongue muscles are strong enough to supply the necessary up-pulling power, they set the entire vocal organ in motion. The vocal chords are then automatically stretched and singing becomes a pleasure. This is the case with the great singers who, through natural inheritance, or for other reasons, possess exceptionally strong tongue muscles. But those whose voices are not all that they desire, may now develop these muscles until they are just as strong as those of the great singers and thereby acquire a perfect voice. Since these muscles are comparatively easy to get at, they can be trained and developed. Practical tests on hundreds of students have proven in every case that this theory is not only correct, but absolutely infallible. This places voice study on an exact scientific basis and solves a problem which has troubled voice teachers for over three hundred years.

THE CONTRARY PROOF

So far it has been my aim to furnish positive proof that the vocal organ must be perfected before one can

have a perfect voice. It has also been shown that it is the tongue muscles which cause all the trouble, and that when these are strengthened and developed a perfect voice becomes an assured fact. A still further proof will now be given.

If the vocal organ is deficient, the voice cannot be the best or nearly the best that is possible to the individual. He may sing, but a close observer will notice one or more of the following defects in his voice:

The tones may be good up to a certain range, usually about F on the fifth line for high voices, about C or D below that for low voices. After that the tones become either soft and thin or else loud, piercing and hard, or the compass will extend no further than the tones above mentioned. Such a compass is entirely too limited for a successful career.

Soft tones should be employed for special effects only; they are unsuited for normal, public singing. Loud, piercing or hard tones are, of course, always offensive.

HOW DOES THE SINGER REALIZE HIS FAULTS?

Naturally, a singer realizes first in a musical sense that some of his tones are not so good as others, or that some tones require much greater effort than others. He may, indeed, get relief by employing special means, such as greater breath pressure, or focusing the voice toward the head, or by the singing of other vowels than the normal "aa;" but at best these means help only temporarily. In the end he is worse off than before, because he has added new faults to those he previously possessed. But there are physical signs which tell him unmistakably whether his tones are correct or not. For instance, if on high tones, the tongue is drawn far

back from the teeth and rises in the back, and more especially if the tongue becomes hard, it is an infallible sign that his vocal organ is imperfect. Again if the tip of the tongue braces itself against the front teeth, his organ, while reasonably correct, is still far from being perfect. If his tongue sinks down in the throat, if it is flabby, or very loose, it is a sign that the all-important muscles are very weak. If the jaw becomes stiff or the palate rises or spreads apart in the back of the mouth, the organ is imperfect.

But if his tongue rises a very little all along in a straight line from tip to back, or if the tongue becomes somewhat thick, and most especially, if he sings with utmost ease throughout the scale on every vowel, his vocal organ is sure to be right. Such a favorable condition is rarely to be met with; not many singers approach this ideal condition, but if they knew where the weakness was to be found, they could correct it, and then their tones would soon become freer and better. Often a few months' practice will develop a voice to undreamed of beauty, power and compass.

MUSCLES WHICH INTERFERE WITH OR ENTIRELY PREVENT THE CORRECT CORD-STRETCHING EFFORT

It can be stated with absolute truth that voices would be much better, and there would be more good voices, if the singer, at the beginning of his career, would, physiologically speaking, employ only those muscles which are essential to a good voice. If one begins right and continues to use the correct vocal mechanism, it will gain in strength every day and his voice will become more beautiful and the compass will increase. This is the case with those great singers,

who preserve their voices to old age. On the other hand, if the correct mechanism is not under the singer's control, there is a constant temptation to employ other muscles, to temporarily force the voice, and these, in the end, will destroy it.

Suppose the voice is naturally attractive, but too light and soft for public use. The singer's natural instinct would be to make the voice larger by a greater exertion. Now the legitimate, correct vocal muscles cannot, as has been explained, be forced. Therefore, if he exerts himself, he is not using the correct vocal muscles at all, but others which lead him astray, though, temporarily, they help to give his tones greater power.

There are several muscles to the hyoid bone, other than those already described, which can obstruct the cord-stretching:

First, by preventing the upward-downward tilting of the hyoid bone, which would also prevent the thyroid cartilage from being tilted downward in front;

Second, by drawing the hyoid bone and the larynx forward, which again would interfere with the natural cord-stretching.

The first fault is caused by the digastric muscle (the muscle employed when chewing). It runs from the cranium to the hyoid bone and the chin. It prevents the tilting of the hyoid bone and the thyroid cartilage, because it pulls them straight upward and backward. Two other muscles also oppose the correct vocal cord-stretching in a similar, but less degree; they are the stylo-hyoid muscles, from the skull to the hyoid bone, and the mylo-hyoid muscle, from the lower jaw to the hyoid bone.

The second fault is caused by the powerful genihyoid muscle (Fig. 44, marked IV). It is attached to the lower part of the chin and runs to the front part of the hyoid bone. It, therefore, can draw the hyoid bone, and with it the entire larynx, forward, but with most injurious effect to the voice.

All these muscles belong to the lower jaw. They are very strong, because they were designed to open and close the mouth. These muscles are still further aided by the muscles which pull the jaw upward. All these muscles combined possess very great power and by their contraction they interfere greatly with the true vocal muscles; that is, with the entire muscular apparatus which moves the larynx and stretches the vocal cords.

The temptation to use these chewing muscles is very great. We associate in all physical efforts a corresponding muscular exertion. If a heavy weight is to be lifted, we instinctively determine upon a corresponding effort which we expect to feel in our arms and shoulders. So, also, the singer judges that a louder tone demands a greater effort, and naturally enough, thinks that he must feel a greater effort. And just here is the great danger of using the jaw muscles. They are strong and ever ready to help; besides, they at once change the tone and deceive the singer into believing that he is right.

Since these muscles have such a great power to excite sensation, many suppose that the jaw muscles must be kept absolutely relaxed and loose. This is natural enough, but in relaxing the jaw muscles he also relaxes the entire throat, and in so doing, he relaxes the essential cord-stretching muscles also, since he cannot differentiate between them. Now when the

essential cord-stretching muscles are relaxed, the vocal chords must also relax; that is, they surrender their enlarging, condensing effort; thereby making an artistic voice impossible. Only feeble or breathy tones are possible when the vocal muscles are relaxed.

Either of these two conditions is the almost universal rule among singers. The exception is hailed and worshipped as a star. If voice study were rightly understood, stars would be the rule, and failures the exception.

In correct singing, that is, when the tongue muscles are trained and made strong, there is a very powerful contraction of the true vocal muscles. But these contractions are not felt as an effort or an exertion. In fact, there is no strain anywhere.

Every one of the tongue muscles described in the previous lessons has a functional share in the whole combination, while every one of the jaw muscles interferes with the true artistic voice.

Mechanical calculations alone show that only the hyo-glossi and chondro-glossi muscles, which extend upward and forward from the hyoid bone into the tongue, are legitimate agents, for only these can assist the sterno-hyoid muscles (from hyoid bone to breastbone) in tilting the hyoid bone and the thyroid cartilage downward upon the cricoid joint to stretch the vocal chords. These first-named muscles pull the rear horns of the hyoid bone upward at the same time that the sterno-hyoid pull the front of the hyoid bone downward. Of course, this action also tilts the larynx downward, being assisted by the sterno-thyroid muscles (from thyroid cartilage to breastbone), provided the cricoid bone is held firmly against the spine, which is always the case in the correct action as here given.

This fortunate division of the right and wrong muscles into two classes, tongue muscles and jaw muscles, make vocal study an infallible, exact science, which can be demonstrated with mathematical certainty.

One more fact remains to be mentioned; that is, when all the true vocal muscles act powerfully together, a feeling of openness or looseness is experienced by the singer, leading him to believe that all muscles are relaxed. This feeling is correct, but the inference that the muscles are relaxed is a mistake. A relaxed muscle means a dead muscle, without life and energy. Such a muscle cannot do any work. But a stiff or tense muscle is also useless, for it is held too tight to perform any other office than that of stiffening itself. Neither a relaxed muscle nor a tense one is of any use in voice. What is needed is a flexible, strong muscle, that can contract with great rapidity and, because of its strength, also with great ease.

One needs only to look at a superior athlete or acrobat for an illustration of flexibility combined with muscular strength. Again, if a pianist were to relax his fingers, there would be no strength, consequently only a feeble, weak tone; but if his fingers are stiff, there can be no rapidity of movement. If, however, his muscles are flexible, and through practice are made strong, there will be no apparent effort, even for the biggest tone, and his movements will still be rapid. So also, if the correct vocal muscles are made strong, there will be no stiffness, and certainly no relaxation.

There is only one way to develop a muscle's strength, and that is by the muscle's own effort to contract against resistance. Many years of study and experiment upon myself and hundreds of students, among whom are many who are now in the front ranks of their

profession, in the leading opera companies of both Europe and America, as concert singers, actors and voice teachers, have proven not only that this method is correct, but that it is the only possible way by which the student can develop his voice and bring it to perfection.

BREATHING

It may be assumed that those singers or speakers who, by nature or by the study and practice of this method, sing only with the action of the true vocal muscles, the correct method of breathing will gradually and instinctively assert itself. Even if this should not happen, the tones will still be beautiful and large; but for the purpose of smooth phrasing and easy diction, and still more for the purpose of tone shading and expression and other special effects, correct breathing is essential.

Many attempts have been made to establish different systems of breathing, but they are all more or less based upon opinions and experiences of singers and teachers who believed that their system was the best possible. Some good has been accomplished by these means, but such systems could not cover all points and cases, because in the first place the systems were not written out in the exact and scientific manner which alone can explain and direct the correct way of inhaling and exhaling breath. Furthermore, it requires not only a general knowledge of physiology to establish the use of the true breathing muscles, but also a most painstakingly minute search and long experience, which is generally acquired only by the specialist.

The confusion which still exists in regard to breathing is best illustrated by referring to the differences of opinion in regard to abdominal, chest or diaphragmatic breathing. As a matter of physiological fact, neither

one alone is correct or even possible. We do not, for instance, inhale at all, nor is the breath ever expelled.

To inhale the breath would take up too much time. It could not take place as instantaneously as is required for the minute pauses between phrases in singing and speaking. What we really do is to create a vacuum which is at once filled by the air. This vacuum is created by a set of muscles specially adapted for this purpose. Then to convert this air or breath into tone, an entirely different set of muscles is put into action. These two separate functions govern the chest, diaphragm and abdomen so that each has a certain share in the work accomplished. No single one of these predominate in correct breathing.

Although the breathing organs are a most necessary and indispensable part of the entire vocal apparatus, yet that apparatus is by nature divided into the vocal organ from breast and collar bone upward, and the breathing organ from these bones downward. So it was deemed best not to overburden the student with too much material and perhaps, in the end, confuse him.

The chief end and aim of art should be to give joy, to arouse noble sentiments, by speaking to the heart first. In music this is done by beautiful sounds, therefore the singer's object should be to develop his voice so that all the beauty and nobility which exists in such superabundance about us, can be set free. Only after such beauty of tone is at the command of the singer will the study of songs become of any value. Then intelligence will be added to emotion, and the two united into one perfect work of art. Voice is the result of physical conditions, very much as in any other musical instruments. It is subject to similar laws, and in the case of tone quality, to identically the same laws.

In the lessons on the "Theory of Sound" it will be shown that tone quality is dependent upon the perception by the ear of the overtones arising out of the fundamental tone. But the overtones cannot be strong enough or numerous enough unless the primary or fundamental tone is strong, hence the fuller the tone the more numerous are the overtones and because of this the finer and sweeter is the quality of the tone to the ear.

Now in order to gain a larger volume of tone, we must utilize all the vocal material which we possess. That means, that all the muscles which constitute the vocal chords must unite and condense into practically a single chain of muscles. In addition to this we must be able to stretch this chain of muscles. This can be done only by the external laryngeal muscles, and of these again only the tongue muscles need to be trained and developed. This reduces voice study down to a few simple exercises.

These simple exercises gradually change the weak muscles into strong muscles, and as soon as the full strength is acquired, the full beauty and power of the voice is possible, and to the author's positive knowledge this voice will be one of glorious beauty.

EXERCISES TO LESSON XX
THE HYOID BONE

The hyoid bone (Fig. 30, No. 5) if of great importance, not only in tensioning the vocal chords, but also in other ways. This small bone furnishes further proof of the right and wrong way of speaking and singing. To this bone are connected not less than nine different muscles, of which four move it downward and backward and the others move it upward. These muscles lead up from the breastbone (Fig. 30, No. 6) and collar

bone (Fig. 30, No. 7) to the hyoid bone and from it to the chin (Fig. 30, No. 11), the tongue (Fig. 30, No. 12) and styloid bone (Fig. 30, No. 13). These muscles should so balance each other as to hold the larynx in the natural position for every tone, from the lowest to the highest and from the softest piano to the loudest forte. Of course this applies to the public speaker as well as to the singer, for in either case the more power there is, the less efforts will be required.

HYOID BONE UPWARD: The chin and throat normally form a right angle and in this angle is located the hyoid bone. It is shaped like a horse shoe, having a thick circular body in front, from which two horns point backward and upward. Place the soft part of your thumb under the front of the hyoid bone and try to swallow. You will find that the bone is suddenly drawn upward and as the larynx and hyoid bone always move together, the larynx is also forced upward out of its natural position. By this action the down-drawing muscles are elongated, made thinner and weakened, and because the resistance is removed, a tension of the vocal cords becomes impossible. It is therefore evident that a raised larynx is injurious to voice.

HYOID BONE DOWNWARD: Again place your thumb against the front of the hyoid bone and yawn silently. You will find that the bone is drawn far down and with it the whole larynx. In this case the muscles which draw the hyoid bone upward are eliminated and those drawing it downward are shortened and weakened. Finding no resistance, they can exert no strength, therefore a tension of the vocal cords is again impossible. From this you can see that a lowered larynx is also injurious.

The following mistake is even more injurious than

either of the above: Place the thumb under the corner of the front of the chin so that it presses strongly upward, then make the jawbone very stiff, almost as though you were cracking a hard nut with the back teeth. An unusually strong pressure on the thumb will be noticeable and if, during this pressure, you touch the hyoid bone with the other hand you will find that it is drawn forward and with it the larynx. In the first and second examples a tension of the vocal cords was impossible. In the third, the cords were in a very decided state of tension, but a tension that was forced and unnatural. The person who allows this strained condition of the jaw muscles to continue, pays for it by the loss of his voice. From this you can see that it is very injurious to push the larynx forward.

These examples furnish incontestable proofs that neither the tongue, palate nor larynx should move during voice exercises. If these parts move it is because the hyoid muscle is weak and it follows therefore, that the more you strengthen this muscle, the finer and larger your voice will become.

Those who have taken voice lessons will remember that they were told by their teachers that they should place the tone forward or direct it against the hard palate, so as to utilize the resonance chambers. If you try to direct your tone in this way you will invariably raise the larynx and in time damage your voice. It is true that the good tone must be felt forward and when you feel the beat of the tongue with each tone you will find that the tone **is** felt forward. If your tone is correct it will automatically place itself, but if you try to make it come forward, your voice will suffer.

While it is possible to improve one's natural voice somewhat in a short time, as the previous lessons have

shown you, and is proven by the very many letters which have been received from grateful students, yet the radical improvement, the voice of the great orators and singers, can only be established on a permanent basis through the strengthening of the isolated hyoglossi muscle and through no other means whatsoever.

To me this muscle is a most wonderful thing, occupying a space between the tongue and the jaw, it lies buried like a violet among the leaves and grasses, unobserved, neglected and trodden down by the careless foot of man. Also, like the violet, nourish it, care for it, and you will find it a thing of transcendent beauty.

Fig. 124

Thumb Against Inner Side of Jaw Angle.

Press the thumb tip upward into either the right or the left angle of the jaw, nearest the throat. Hold your head in a loose, natural position. Push the soft flesh inside the jawbone upward and hold it upward with the thumb. Then as you have been taught, lower the middle of the tongue, that is, make the groove in your gentlest, easiest way and observe that now this flesh, this soft part of the throat nearest the jawbone, has suddenly become very strong. Some will even feel it almost as hard as steel, while at the same time, you are not using the slightest force or exertion and your throat feels absolutely free and loose. It is necessary that you push the thumb as far upward as possible. See Figure 124.

Hold the thumb in that position and look into your mouth, using a mirror. Notice that the tongue is making the groove, but that the rest of the tongue is loose; neither has the palate or uvula changed its natural position in the slightest degree.

What has happened to change the soft flesh nearest the rearmost part of the jaw bone (you can use either the right or left hand thumb) into a firm, almost hard, substance?

This has happened: Your thumb is pressing directly against the rearmost parts or fibres of the hyo-glossi muscle and thereby gives this muscle a firm hold or resistance against which it can contract most completely.

EXTERNAL RESISTANCE ROUTINE

1. With mirror in one hand, open the mouth to find your tongue in a loose, relaxed position. Now several times, make the groove, that is, drop the upper skin of the tongue way back in the mouth. Make sure that neither larynx nor palate move at all while you

form the groove. Notice, that as you make the groove in the tongue, there is practically no feeling associated with the movement inside of the tongue; no more than you feel when you move a finger or drop the eyelids.

This illustrates that a muscle can and does contract without leaving any trace of actual effort or exertion, provided there is no **RESISTANCE!**

2. Rest one hand, either the right or left hand, against one side of the face, so that the thumb lies against the inner side of the angle of the jaw, near the throat.

3. Push the thumb strongly upward into the soft flesh under the jaw. The head must be held loose and slightly lowered, so that the neck muscles remain flexible.

4. Now, with the thumb in the position described, open the mouth and make the groove, using mirror to make sure that the groove is made. Notice now, that the thumb is being pressed upon and realize that it is the groove in the tongue which caused the pressure.

Relax the tongue; that is, let the tongue resume its natural effortless position and find that now there is no pressure upon the thumb.

5. Repeat this exercise many times. At the count "one," make groove. At the count "two" let go, and notice the pressure as the groove is made and the cessation of pressure as the tongue relaxes. See Fig. 125.

LOOSE JAW

To the student, the abnormal action of vocal muscles is nearly as important as the normal. The usual faults are committed because the normal agents fail to act or exert a disproportionate force. This is

Fig. 125

Thumb Against Jaw Angle and Groove of Tongue.

true of speakers, singers and it is the cause of all vocal defects of whatever kind, especially stammering.

The sinking of the tongue (the groove) is caused by true vocal muscles, also the backward movement.

These normal vocal muscles do not fail to contract, but they are too weak to resist the action of the non-vocal muscles; notably those non-vocal muscles that reach from the chin and the jaw to the hyoid bone and to the thyroid cartilage.

But sometimes the true vocal muscles are very powerful, so strong in fact that the person having such strong muscles should be in the possession of a truly great voice. However, in spite of that, he is relatively a very poor vocalist. In some way, such a person has either lost the control over his vocal muscles, or has from birth or childhood never realized his great power. This is the condition I have invariably found in stammerers.

But singers also fail to realize their own strength, perhaps through timidity. They find that at a certain pitch, the voice seems to give out, to break. This frightens them and they lose confidence. Not knowing what is the matter, they grope blindly and generally fall into one of two great faults.

One of these faults is, they relax the entire throat so that the true vocal muscles cannot operate at all; the result is a thin, poor tone.

The other fault is that they seek for a support to sustain their higher notes and contract the jaw and chin muscles; those false friends of the vocalist, who like sirens give them a temporary assistance but fiend-like destroy them completely after a short and temporary service.

If I were greedy of immediate success, I could have given you some exercises in the first few lessons that would have brought out your voice so much that you would marvel at the volume, and, within a short compass at least, at the beauty of your voice. All that would

be needed are three or four lessons to show you how to contract the chin and jaw muscles. Every one of you would have been highly pleased at the quick results. But in the end you would pay dearly for such ephemeral success. I prefer the slower, natural way and the permanent success of my students.

The following exercises will demonstrate how easily the right and the wrong actions may be confounded.

THE WRONG WAY

1. Place thumb under the jaw and push strongly upward into the flesh.

2. Holding thumb in that position now stiffen the jaw, just as if you were cracking a hard nut with your back teeth. Notice that when you stiffen the jaw, the flesh above the thumb swells downward upon the thumb and becomes hard, unyielding.

3. While you hold the jaw stiffly tight, with a finger of the other hand, touch the under part of the chin, which now you will find also to be very hard, so that even a very strong pressure upward with the finger will not make any impression.

4. Suddenly relax the jaw, and now find that the flesh in the jaw and under the chin is again loose.

FALSE SPEAKING AND SINGING

5. Again place thumb under the jaw. Call out "one," "two," "three," or any short sentence, or, better still, sing a medium note, later a high note. At the same instant stiffen your jaw. Notice the swelling, hard flesh under the jaw and the chin, but also notice the very great power on medium notes, the really fine quality of the voice, while you forcibly contract the chin and jaw muscles.

Do you want quick results? Here you have it, but not with my consent and **strongly against my advice!**

The same result, but not so quick, because not so direct, may be obtained by a powerful compression of the breathing muscles, for this reason: When the breathing muscles are very powerfully contracted, they compel the jaw, chin and throat muscles to resist, with a result that they are stiff just as in the above experiments, and the tone will also be strong. This is the trick resorted to by many teachers; it brings quick results, but ultimate disaster.

THE RIGHT WAY

Lettuce, grasses and some flowers can by artificial means be made to sprout, grow and even bloom in a very short time, but such forced plants have no nutritive value, no taste or fragrance. Weeds grow and are ripe long before the corn or wheat with which they grow. So with a true voice. That which is truly valuable requires labor and time to ripen and bear fruit. "By their fruits ye shall know them," is as true of the voice as of anything else!

The following will illustrate the right way:

1. Again place the thumb under the jaw and push upward. Hold the mirror in the other hand and see that the tongue lies loosely, quietly in the mouth.

2. Still holding the thumb in place, suddenly, but very loosely and easily, drop the upper part of the tongue, as loosely as you drop the eyelids. Notice that there is now a groove, crease or furrow in the tongue. Be sure that the extreme rear part, that part nearest the throat, is also down. There should be no protuberance in the rear part of the tongue.

The loose, natural position of the tongue should be as in Fig. 127, while the groove should be the shape of

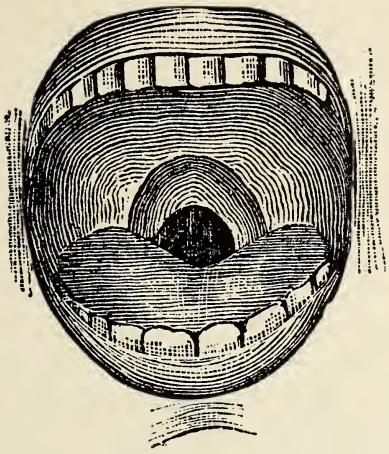

Fig. 126

Tongue, especially in high notes. Groove starting from the extreme rear of the tongue.

Thick, muscular tongue, also narrow arches, showing a strong contraction of the palate muscles.

Fig. 126. These figures, by the way, were taken from the greatest singers of the old Italian school and preserved to us. Every one of the greatest singers, the ones with the most faultless voice, show the groove especially in powerful and high tones.

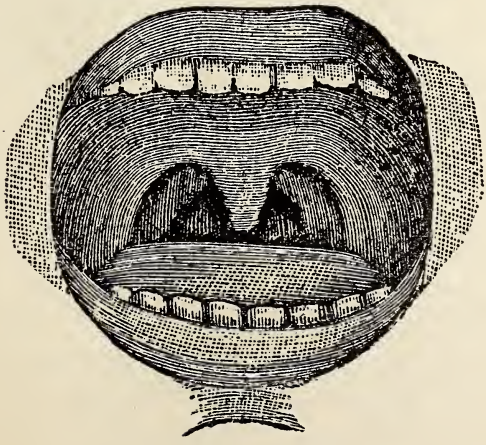

Fig. 127

The tongue and palate at rest. Tongue fills the space between teeth. Thick, muscular tongue, wide arches, showing palate at rest.

Notice now, when you make the groove, with thumb under the jaw, that you feel the same pressure, either more or less, depending upon your natural strength, as you felt when you stiffened your jaw as, in cracking a nut. But now notice particularly that in spite of a strong pressure upon the thumb, your jaw and chin do not feel any sense of tightness.

In both experiments, in the wrong and in the right way, your thumb is pushing upward upon the all-important hyo-glossi muscles. These muscles must contract for all powerful tones. In the first instance they were contracted with the help of the jaw and chin muscles; this forces them and is **absolutely wrong.**

In the second instance, the hyo-glossi alone contracted. You felt the pressure, perhaps more clearly than before. Your jaw and chin were not stiff. The tongue alone acted and that is the correct way. To acquire the highest type of voice you should use no other way of attacking and holding the tone than free tongue-action.

Until the next lesson, practice as much as you can the tongue groove, against the thumb under the jaw. Make groove at "one," hold it for "two," let go at "three." Repeat this way over and over many times.

THE CORRECT WAY

After a few days, and when the groove of the tongue, against up-pushing thumb under the jaw (either right or left) is easy for you, try the following:

1. Again push up against the inner jaw with a thumb, hold it steadily and

2. Make the groove, at the instant of calling out "ha," "ha," "ha," expecting a full strong voice—then call out "hi," "hi," "hi." Notice a strong pressure at each syllable, also a strong, full tone and no sense of stiffness or tightness in the jaw, or throat.

3. Count "one," "two," "three," etc. Between each count make a rest to notice that when at rest, there is not the slightest pressure while at each spoken word or syllable you notice a **decided** pressure.

4. Read aloud the following poem taken from the Railroad Man's Magazine, April, 1917.

SEE THAT STRING OF CARS OUT YONDER?

See that string of cars out yonder
  Coupled to old Ninety-Four?
Some are from the far-off desert,
  Some are from the distant shore;
Some are marked the New York Central,
  And some are marked the B. and O.
They are loaded down with treasure,
  Always, always on the go.

See that string of cars out yonder?
  I sometimes wish that I were one;
Always riding, always going,
  Yet their work is never done.
You see one Big Four leave Chicago,
  Billed out through to El Paso;
Soon she leaves via New Orleans
  On her way to Baltimo'.

See that string of cars out yonder?
  Some are painted almost new;
Some look like the rip-track wants them,
  Some look like their life is through.
Yet the old ones, like the new ones,
  Do the same amount of work;
So, you see, those cars out yonder
  Never, never try to shirk.

At first reading, make a stop between each word. Any word with two or more syllables should be separated thus:

"See - that - string - of - cars - out - yon - der,
Cou - pled - to - old - Nine - ty - Four?"

The second time string all the words of one line together, as if they were just one word. Of course now you feel the pressure against the thumb as a continuous pressure.

The third time, read in a natural manner. Notice a pressure when you speak and looseness when you pause between the sentences.

As you speak these exercises or when you sing, notice that the voice is made directly from the tongue. When you have succeeded, there will be absolute freedom everywhere and a strong voice; in fact, you can almost "raise the roof."

Sing at first medium tones, then as high as F on fifth line. First vocalize, then count, later try a song.

The next lesson is a continuation of this important lesson.

EXAMINATION QUESTIONS TO LESSON XX

1. Why do voice students fail?
2. What muscles are destructive to the voice?
3. How many muscles are attached to the hyoid bone?
4. Can you draw the hyoid bone upward?
5. Can you pull the hyoid bone downward?
6. What is the correct position of the hyoid bone for singing or speaking?

7. By what false action can the vocal chords be stretched?

8. Can you contract the hyo-glossi muscle against thumb?

9. Should the throat be relaxed, stiff or what?

10. Do you want quick results or are you satisfied to work for permanent results?